Exploring the Role of Psychological Capital and Academic Hope in High School Students: How they interact With Their Cognitive Strategies to Influence Learning Outcomes?

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Exploring the Role of Psychological Capital and Academic Hope in High School Students:
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Abstract

High school students who possess and exhibit psychological capital (PsyCap) evaluate their goal determining behaviours and cognitive strategies through displaying self-efficacy, hope, optimism and academic resilience to attain higher learning outcomes. In the first study, the factorial structure of PsyCap as second order construct with 4 first order sub-facets was examined. In addition, in a time-lag research, the direct and indirect effect of instrumentality of learning on performance via PsyCap and deep cognitive strategies was also examined by using Structural Equation Modeling. Three hundred and four (N=304) high school students participated in the study. The results indicated that psychological capital and deep cognitive strategies were significantly correlated. Also, the outcome of Study 1 concluded that psychological capital partially mediated the relationship between the perceived instrumentality of a learning activity and academic performance whereas deep cognitive strategies did not predict achievement outcome and consequently did not have mediational effect. Moreover, when individual subscales of PsyCap were regressed separately, only academic hope and optimism emerged as significant predictors of achievement outcome controlled for self-efficacy and resilience. In a follow-up experimental study, the moderating effect of academic hope in explaining the generation and utilization of deep cognitive strategies was observed in an academic failing condition versus a neutral condition. The participants (N=131) were randomly assigned to experimental and control groups and read accounts of two conditions: failing versus non-failing conditions. Later they were requested to generate and rate the likelihood of using cognitive strategies in admission exam. The results of the moderation analysis indicated that when faced with failing learning condition students were more likely to generate quantitatively more cognitive yet not deep strategies compared to their counterparts in an academic neutral condition. However, when faced with the experimental condition, students higher on hope were more likely to utilize deep cognitive strategies. Thus, academic hope moderated the effect of the experimental condition on the utilisation of deep strategies. The results of the 2 studies is discussed in the light of Conservation of Resources theory, Expectancy-Value and Hope theory.

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Writing this doctorate thesis was a very delightful journey. It started meeting with so many educators from different realms of the field. Two insightful professors, Dr. Julie Rattray and Dr. Nadin Beckman, were exceptional in their guidance while I was writing this research. Now that I am writing its last section, I feel truly blessed to work with you to navigate through this journey and I would like to thank you Julie and Nadin for all the advice that you shared over so many months.

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Every page of this dissertation is filled with hope: A hope for improved educational systems, more progressive schools and universities, more compassionate children and adults, more egalitarian societies and communities and a better one world where our children can blossom with joy and belief.

Declaration

Material contained in the thesis has not been submitted previously for a degree in this or any other institution.

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Chapter 1
Introduction

1.1 General Background of the Research

> On the day of Kay's knighting ceremony, disheartened Wart goes to see his teacher who tells him "the best thing for being sad is to learn something. That's the only thing that never fails. You may grow old and trembling in your anatomies, you may lie awake at night listening to the disorder of your veins, you may miss your only love, you may see the world about you devastated by evil lunatics, or know your honour trampled in the sewers of baser minds. There is only one thing for it then, to learn. Learn why the world wags and what wags it. That is the only thing which the mind can never exhaust, never alienate, never be tortured by, never fear or distrust, and never dream of regretting. Learning is the only thing for you. Look what a lot of things there are to learn.
>
> (T.H. White, *The Once and Future King,* p.183)

The above quotation reflects my perspective on the transformative power of learning and knowledge acquisition on the human condition. In order to achieve such transformation, I believe that individuals should be primarily equipped with psychological competencies in order to approach learning with self-efficacy, hope, optimism and resilience, namely psychological capital, PsyCap (Luthans, Avolio, Avey and Norman, 2007). When students are empowered with such positive motivational beliefs, they are more likely to engage cognitively in order to achieve better performance. Moreover, during periods of failing occurrences, a natural occurrence during the course of learning, I assume that students with motivational beliefs are more likely to overcome learning obstacles by eliciting positive learning strategies. Thus, students' affect and motivational beliefs exemplified through their psychological capital will likely interact with their deep cognitive strategies to explain successful learning.

The current research was prompted by frequent anecdotal observations throughout my career as a teacher, school counsellor and later as a school deputy director. During the data collection period, I was residing in the state of Qatar as an international guidance/counsellor and later as vice principal working in an International Baccalaureate (IB) World School. The educational system in Qatar is characterised by the rigor of its international schools that mostly cater for the educational needs of the majority of expatriate children. The expatriate population of the country similar to the neighboring countries of the Arabic Gulf are comprised of various nationalities such as Canada, UK, US, Middle East, East Asia and Africa. In addition, an increasing number of local Qataris are recently enrolling in international schools due to the high international standards of the academic programs. National students who are enrolled in this type of schools usually receive certain financial support from the Ministry of Education and Higher Education. These international schools are privately run with independent board of governors and the tuition fees are paid by the parents of the students. These schools mostly adopt international curriculum and academic programs such as IB, IGCSE and American programs. The schools that participated in this study were located in the main 3 cities of Qatar (Doha, Al Khor and Al Wakra). The capital, Doha, hosts the major ministries, companies, schools and hospitals. The participating schools were relatively large in size that had a student population ranging between 800-2000 students from early years to the high school. Public schools that operate under the umbrella of the Ministry of Education and Higher Education cater for the educational needs of the school children of the local population and some Arabic speaking children of expatriates, which in turn are mostly funded by the Ministry of Education. These schools follow the national program that is overseen by the Ministry of Education.

In Qatar, the progression from high school to higher education is a common expectation regardless of which type of schoolchildren attend. The country currently hosts 26 universities and higher education institutions (Higher Education Institutions and Academic Programs Recognized By MOEHE In The State of Qatar, 2018-2019) that offer various academic undergraduate and graduate programs in different field such as law, medicine, chemical and petroleum engineering, business management, education

and psychology. Some of these institutions are partially funded by the government and others are funded privately.

In my career, during my conversations and discussions with many high school students, I have been intrigued by the psychological resourcefulness of some of these high school students. Only some are categorised as academically gifted and talented yet they are distinguished by virtue of a self-possessed optimism, hopefulness and confidence. Unlike their counterparts, these students approach academic failures and difficulties with a set of positive motivational beliefs that ultimately lead to better achievement and attainments. In order to understand this specific type of students in a more "scientific way", I aimed to explore the conceptual and empirical nature of positive resources and their way of interacting with cognitive strategies to explain successful learning outcomes.

This thesis is comprised of two major studies. Study 1 aimed to understand the conceptual and factorial structure of psychological capital (PsyCap) and the way it directly influences learning outcomes in a high school context. After examining the factorial structure of PsyCap, I examined the potential direct and indirect mediating role of PsyCap together with deep cognitive strategies to explain achievement outcomes. Consequently, the way students' distant goals influence their achievement outcomes via PsyCap and deep cognitive strategies was also examined. This process was tested in a postulated learning model, which assumed that PsyCap is influenced by distant learning goal achievement and mediates its influence on successful learning. Thus, I assume that meaningful learning happens when these tripartite factors, cognitive, motivational and psychological factors, interweave interdependently rather than independently to explain positive learning outcomes. In addition, Study 2 investigated the potential role of academic hope in explaining the nature of the elicited learning strategies in the face of a failing condition. It concluded that when faced with academic failing condition, students generate more cognitive strategies compared to students in non-failing condition. Moreover, results in Study 2 also observed that academic hope moderates the effect of the experimental condition on the utilisation of deep but not surface cognitive strategies. Hence, the two studies of the current thesis explored the understudied affective aspect of

learning behaviour and its interaction with its cognitive aspects to determine successful learning outcomes.

1.2 Rationale of the Research

In the last decade, there has been an observable growing interest in incorporating the principles of positive psychology and affect into learning behaviour and achievement outcomes. With the aim of nurturing students' resources rather than focusing on their negative thoughts and beliefs, the current two studies aimed to further understand the influence of positive beliefs in predicting learning outcomes. As Seligman and his team proposed "well-being is synergistic with better learning" (Seligman, Ernst, Gillham, Reivich & Linkins, 2009; p. 294). An increasing body of research consolidates the power of positive psychology on the human condition (Seligman, 2002). Within this framework, one of the recent positive constructs that is believed to influence human learning motivation and successful learning outcomes is *psychological capital*, which emerged from the domain of organisational and human management psychology while exploring its influence on employees' performance and job satisfaction (Luthans, Avolio, Avey & Norman, 2007). The construct of PsyCap is defined as

> [The] individual's positive psychological state of development and is characterized by: (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success. (Luthans, Youssef & Avolio, 2007, p.3).

The newly coined *multidimensional* construct is made up of four different cognitive and affective competencies namely *self-efficacy*, *hope*, *optimism* and *resilience*. The reason for characterising a construct as multidimensional is explained by the fact that the construct itself is comprised of interrelated elements and measurements, which are

exhibited as an abstract but at the same time possess theoretically significant and parsimonious representation (Law, Wong & Mobley, 1998).

Psychological capital acts as a resourceful competency belief, which motivates individuals to confidently engage in learning activities and develop learning strategies, remain hopeful and optimistic in times of academic challenges and bounce back from adverse academic events with strong determination. Moreover, the thesis investigates the interaction between academic hope and the way it explains the potential pathways and agentic thinking that students generate under negative learning circumstances. I argue that academic hope (Study 2) is integral not only to predict learning performance but also to help students overcome failing circumstance by eliciting and utilising adaptive cognitive strategies. By underestimating the influence of motivational beliefs and more specifically academic hope on respective learning behaviour and strategies, students and educators limit their understanding of its potential association with positive learning outcomes. As was concluded from the regression analysis from Study 1, amongst the four subscales only hope and optimism emerged as a significant predictor of academic achievement when the later was measured after 5 months. Therefore, the role of academic hope was further explored to understand its influence on students' ability to elicit various cognitive strategies to overcome failing learning conditions. Regarding the conceptual differentiation between hope and optimism, both are considered prospective emotional and motivational beliefs; however, unlike optimism, hope has an additional cognitive aspect that influences students' cognitive and learning functioning. For example, both hopeful and optimistic students hold positive outlooks towards future learning outcomes; however, unlike optimists, hopeful students aim and generate cognitive pathways and routes to yield desirable results. The impact of this delineation between hope and optimism is supported by previous empirical findings. For example, in a longitudinal six-year study, Snyder, Shorey, Cheavens, Pulvers, Adams & Wiklund (2002) examined the influence of hope on college students' grade point average and concluded that hope is a predictor of achievement even after controlling for their entrance exam marks. When optimism was added as a potential predictor for academic achievement, no significant relationship was observed between optimism and

performance whereas a positive and significant prediction was made by hope (Barlow, 2002). For this reason, Study 2 captured only academic hope as a subscale of positive emotional belief without including optimism in the design of the experiment.

In short, the power of cognitive constructs in explaining successful learning has received ample attention in the literature of educational psychology. In the same direction, this thesis contends that the role of affect and beliefs is also critical to synthetically understand the complex nature of the learning experience. And in times when failure plagues them, students' resourcefulness becomes a strong indicator that predicts their coping mechanisms through altered positive motivational beliefs and emotions that aim to conquer challenges and promote success. To this end, I examined the conceptual and empirical orientation of such beliefs and explored its role in explaining performance in a high school setting.

1.3 Theoretical and Pedagogical Significance of the Research

The nature and influence of psychological capital has been mostly observed in organisational psychology with adult populations (Avey, Reichard, Luthans, & Mhatre, 2011). However, empirical research that has been undertaken to study its role in pedagogy, learning environments and motivation propensity in younger populations of high school students has received less interest. For this reason, the current thesis contributes to the literature on positive educational psychology in general and achievement motivation theory in particular by linking PsyCap as a motivational belief to the learners' evaluation of the instrumentality of learning activities, utilised cognitive strategies and respective academic attainment. In addition, a transfer in studying PsyCap from the organisational literature into a school setup as a different educational context necessitates a different research approach that considers the peculiarity of schools as organisations that function within a unique learning culture and adds to the diversity of research paradigms outside the field of organisational behaviour where the construct was initially proposed. The dispositional nature of PsyCap as an amalgamation of its four facets with malleable and state-like characteristics (Luthans, Youssef & Avolio, 2007)

suggests an in-depth empirical analysis first that observed its potential role to ameliorate high school students' motivation and academic achievement. For this reason, the two studies also add to the literature of positive educational psychology by examining the theoretical and empirical orientation of PsyCap as a psychometrically valid construct and analysing its relationship first with the observed measures (indicators) and the latent variables (Kline, 2005). Also, based on the results yielded by Study 1, Study 2 examined the role of high school students' academic hope in predicting their elicited cognitive strategies in an academically failing learning condition. Consequently, it was assumed that in the face of academic challenges, hope as a motivational and cognitive resourcefulness variable has the potential to act as the onset of thought-action repertoire to promote adaptive strategies that high school students can use whereas participants with initially low levels of hope are expected to regress in the way they generate learning strategies. In sum, the theoretical significance of the 2 Studies is outlined in the five concepts below.

First, with the rapid growth in the number of theoretical and empirical studies that pertain to the influence of PsyCap on desired performance outcomes (Avey et al., 2011), I believe that further evaluation and validation of the construct is critical to validate its conceptual structure and respective psychometric properties in a high school setup. For example, Dawkins, Martin, Scott and Sanderson (2013), in their review on the psychometric properties of PsyCap, suggested further empirical studies to ascertain the discriminant and convergent validity of the construct, PsyCap. Therefore, this study aimed to discern the conceptualisation and measurement of the construct by assessing how closely the suggested construct corresponded to the collected data in a high school setup. In addition, I carried out a multi-group CFA which allowed testing of whether the different regression parameters of the hypothesised model are equal in the two groups of participants, low and high achieving students. This analysis aimed to cross-validate the goodness of fit using two data sets from two different groups. The examination tested whether the items function similarly in the subgroups or whether some items were biased towards a specific subgroup. Following similar rigorous statistical procedures to examine

the validity of the research variable promises to provide certain robustness to the literature of positive psychology and motivational beliefs.

Second, in their recent review and synthesis on the literature of psychological capital, Newman, Ucbasaran, Zhu and Hurst (2014) concluded that the role of psychological capital as a mediating factor has been largely overlooked and instead most of the previous research has been directed towards investigating the outcomes associated with the phenomenon. In order to address this conceptual gap, Study 1 of the current thesis examined PsyCap's role as a mediating variable and concluded that it mediates the relationship between the perceived instrumentality as independent variable and academic achievement as a dependent variable.

Third, by understanding the conceptual and practical implications of PsyCap and its subscales, high school teachers will ameliorate and empower students' achievement motivation during periods of failing learning conditions. For instance, depending on the nature of the learning task, a student might experience ameliorated hope and low self-efficacy though his or her overall PsyCap might not significantly vary. I assume that in the face of negative influence of learning circumstances or barriers, a student's self-efficacy can be reduced and those with high hope compared to low hope students will rebound from these situations. Hence, when primed with barriers high hope students will rebound with more agentic thinking and generate more pathways whereas low hope students when primed with negative barriers will diminish their goal pursuit activities. This conclusion is in line with the findings from Study 2 which concluded that when faced with the experimental condition students higher on hope utilize more deep cognitive strategies compared to students lower on hope. On the other hand, in order to engage in goal achieving behaviour, the learning goals should be significant for the student to generate similar cognitive routes and learning strategies. In other words, learning goals should possess significant value to increase the agency and pathways of the students' cognition. Hence, the instrumentality of the goal will contribute to goal pursuit behaviour and create the onward cognitive-motivational propensities.

Fourth, since PsyCap is a malleable construct, training high school students to develop a positive motivational belief system will most likely help them to appraise and pursue their learning goals with hopeful cognition and consequently elicit more adaptive strategies and learning outcomes. In turn, in the face of negative learning experiences, including failure, high school students with high academic hopes can be trained to persist during these difficulties, utilise cognitive strategies and modify non-adaptive behaviours.

Finally, the current two studies do not aim to suggest a panacea for some of the negative thoughts and emotions that students' experience during the learning process. For this reason, I have not raised the question of why some intellectually and cognitively high-functioning students fail to achieve whereas, in my experience, often less capable students succeed. Instead, the purpose of this research is to examine the role of positive motivational beliefs in explaining the way students' approach and respond to learning adversities and the nature of the learning pathways that they generate as a response to failing conditions. Also, the current thesis does not aim to compare the significant influence of one subscale of PsyCap over the other. On the contrary, I argue that PsyCap as a second order construct best predicts students' learning and motivation when it is presented as an amalgamation of its four constructs. Meanwhile, the finding from Study 1 draws important conclusions in terms of the specific influence of each sub-facet on achievement outcomes. For example, there is growing research evidence indicating that students' self-efficacy declines throughout schooling most likely due to the increase in academic demands (Britner & Pajares, 2006). Instead, by nurturing academic hope, students' agentic thinking and viable pathways can buffer against the decrease in students' self-efficacy belief and counteract against the detrimental impact of students' functioning in low self-efficacy mode. In fact, these developmental changes might potentially impact the remaining subscales of the PsyCap; however, longitudinal studies that can examine these variations or stabilities are insufficient. For this reason, findings from Study 2 provides some potential theoretical and empirical support for the aforementioned cognitive-motivational challenges of students' progressive learning behaviours especially by having in mind the fact that self-efficacy and hope are positively correlated (Results of Study 1; Phan, 2013).

In synthesis, the current thesis explored one of the understudied realms in the field of educational psychology, namely positive motivational beliefs. More specifically, the anticipated influence of PsyCap and academic hope on yielding successful outcome and deep cognitive strategies during failing circumstances further highlights the necessity of incorporating similar beliefs in educational practices. In the next section, a closer scrutiny of the contextual specificity of the target participants will be provided which will help to understand the peculiar motivational perspective that PsyCap was hypothesised to capture in high school context.

1.4 Motivational Beliefs in High School: Contextual Considerations

The current two studies examined the potential role of positive motivational beliefs in school setup. Theoretically, the way similar beliefs and cognitions are formed, developed and associated with positive performance should vary between industrial organisations (where the positive impact of PsyCap was initially observed) and schools. For one reason, there are qualitatively significant developmental and motivational differences between employees and students including age, cognition, motivations and behavioural patterns. In fact and more specifically, there are within school-division variations in learning approaches and achievement motivation between elementary, middle and senior school students. For example, Harter (1996; see also Frenzel, Goetz, Pekrun & Watt, 2010) in a sequence of studies concluded that students in the beginning of senior school, grade 9, shift their motivational orientation from intrinsic to more extrinsic interests. Most likely, students in senior school attribute their present learning experiences and anticipated achievement outcomes to future extrinsic goals including graduation from school, enrolling in university education and later bringing their contribution to the larger society. Similar to their motivational orientation, I hypothesised that positive motivational beliefs as state-like constructs influence high school students' achievement outcome and the way they elicit strategies in the face of failing conditions. Furthermore, the underpinning rationale of capturing PsyCap in high school is twofold.

Primarily there is an observed qualitative alteration in the motivational orientation of students in high school that reflects the developmental changes observed at this stage (Gottfried, Fleming & Gottfried, 2001; Unrau & Schlackmanm, 2006). Most probably, due to their social interactions and wider contextual influences, students discover and embrace more utilitarian objective values for their education and learning. Also, throughout my previous practice as a school counsellor, I have observed a strong association between the students' academic motivation and future plans to be successfully enrolled in higher education. I believe that at this stage high school students develop a cognitive ability *to layer* their learning motivations and add the instrumental value of their present learning experience for future plans which could have been largely overlooked during the earlier years of their schooling. In this regard, it is our responsibility as educators to nurture their resourcefulness and potentialities in order to support them in achieving these distant goals and overcoming learning barriers as part of continuation in their lifelong learning journey.

Secondly and in relation to the first rationale, high school students experience increasing achievement pressure as a result of preparation for enrolment in higher education, mostly examined as the stress of being "prepared for college life" (e.g. Conley, 2008; Janiga & Costenbader, 2002; Moore et al., 2010). By recognising these anticipated challenges, I assume that high school students should be trained to develop and maintain psychological resourcefulness and set of positive motivational beliefs that facilitates this transition. By nurturing positive motivational beliefs early in high school, students can be shielded with the necessary resourcefulness to buttress against potential negative experiences. Hence, the current thesis explored the anticipated critical role of motivational belief in predicting future achievement and success. This argument is further supported by a meta-analytic review that investigated the predictors of college success measured through Grade Point Average (GPA). In this study, it was concluded that the strongest predictors for high GPA were academic self-efficacy and academic motivation whereas further regression analysis indicated that factors such as psychosocial and study skills contributed to positive college learning outcomes above socioeconomic status, standardised tests and even high school performance (Robbins et al., 2004).

Unlike trait-like factors, such as cognitive abilities and personality that have been traditionally investigated as predictors of academic success, the current research explored the possibility of instilling and cultivating state-like motivational beliefs such as self-efficacy, hope, optimism and resilience. I assume that cultivating students with similar positive self-beliefs is more likely to yield successful learning outcomes. Meanwhile, the current thesis, by emphasising the critical role of motivational beliefs, does not overshadow the role of cognitive strategies that students utilise for successful learning. Any theoretical or empirical examination that reduces the role of cognitive strategies in predicting successful outcome limits the comprehensive understanding of the processes involved in determining successful learning. Motivational process by itself only derives students' decision to act without providing the cognitive strategies required for achievement. By having in mind this argument, the proposed model in Study 1 (presented at the end of Chapter 3) is an integration of the cognitive and motivational perspectives of learning processes and outcome.

1.5 The Theoretical Framework of the Two Studies

The current two studies aimed to explore the nature of PsyCap and academic hope as motivational beliefs in the high school population and examine its role in their learning process and outcomes. As a desirable characteristic that nurtures students' achievement motivation, the positive consequences of cultivating psychological capital is explained within the theoretical framework of positive psychology that underpins two major conceptual perspectives (Youssef-Morgan & Luthans, 2013):

1. The thought-action implications of positive psychological resources
2. The elastic nature of the construct within a broad scope and prospect

First, with regards to the thought-action implications of PsyCap, it is assumed that students' positive beliefs and thoughts are action driven and goal oriented. This line of argument proposes that human behaviour is goal-oriented and students engage in learning activity *purposefully*. In support of this theoretical perspective of student's motivation, Hope Theory (Snyder, Feldman, Shorey & Rand, 2002) argues that mental

action-sequence is bound within learning goal and individuals with high hope conceive meaningful pathways and agency to yield positive outcomes. The underlying dynamism of PsyCap assumes that various kinds of psychological capabilities and competencies accumulate as Conservation of Resources (COR) (Hobfoll, 2002). In COR theory, individuals obtain, preserve and protect previously acquired resources and meanwhile in the face of deterioration of resources individuals' motivations for goal pursuit behaviour are threatened. However, when loss of resources is reversed and students mobilise their regained resources, this mobilisation leads to achievement motivation for goal attainment plans and strategies. One essential reason for individuals to conserve their resources is the integral value of these resources for goal achievement. With the potential capacity of these resources to attain distant and future goals, individuals aim to re-mobilise them after periods of losing them. Moreover, it is assumed that these resources – including self-efficacy, hope, optimism and resilience – *act as caravans* aggregated together to predict psychological wellbeing and productive functioning. For example, Ouweneel, Le Blanc & Schaufeli (2011) observed that students' personal resources predict their engagement in their learning and consequently this engagement increases their personal resources which creates a caravan of resources. This finding supports Hobfoll's theorization (Hobfoll, 2002) which proposes that resources accumulate and are conserved.

Second, within the positive theoretical framework, psychological capital which is conceived, measured and explained in grounded theory, has an important property of being an elastic and developable construct (Luthans, Youssef & Avolio, 2007). Due to its state-like nature, the construct has the potential to be developed via training and micro-interventions that in turn positively impact performance (Luthans, Avey & Patera, 2008). In achievement motivation theory, malleability plays an important role in helping students approach learning in a confident manner with the self-belief that their efficacy and hopeful cognition for task performance can be enhanced and developed by training. For example, Blackwell, Trzesniewski & Dweck, (2007) concluded that adolescents who endorse more incremental approach towards intelligence as being malleable and flexible adopt high-level learning goals and make less ability-based and "helpless" attribution

with the result to achieve higher performance (in mathematics). In line with Seligman, Steen, Park and Peterson (2005), I argue that PsyCap not only acts against negative learning experiences that are an indispensable part of the course of academic life, including poor performance, emotional disturbances and disengagement (as explored in Study 2) but it also builds on positive cognitions, affects and resourceful learning. It is the substantial purpose of this thesis to contend that studying positive beliefs should transcend the conventionally unsubstantiated rhetoric of "positivism" and provide theory driven explanation for its impact on learning behaviour. For this reason, I argue that not all positive cognate constructs that are malleable should rapidly be embraced under PsyCap as suggested by Luthans and colleagues (2007) despite the fact of whether they possess elastic properties or not. Hastening in this direction could debilitate the scientific progress of positive psychology and could resonate scepticism of the opponents of the positive learning movement, this time justifiably. On the contrary, instead of expanding the concept of PsyCap and its effect horizontally to include other similar positive states, Study 1 first aimed to validate the underpinning conceptual and theoretical orientation of the construct. Possessing the property of being malleable is promising for the discipline and research in school psychology in general and motivational beliefs in particular in addition to its anticipated positive impact on teaching and learning practices.

In addition to Hobfoll's (2002) Conservation of Resources theory in explaining the way PsyCap is developed and nurtured, the thesis makes additional theoretical references to various achievement and learning motivational theories specifically Expectancy-Value theory (Wigfield & Eccles, 2000) and Hope theory (Snyder, 1994, 2000) in order to interpret the results yielded from study 1 and Study 2.

1.6 Expectancy-Value & Hope Theory

In general, students pursue specific goals behind executing learning tasks. According to Expectancy-Value theory, students' achievement task, vigour and performance is a function of their ability beliefs, *value of the activity* and past achievement outcomes (Eccles et al., 1983; Wigfield & Eccles, 2000). In *Expectancy-Value theory,* students'

future oriented thoughts are introduced and conceptualised as a key component to understand their motivation to learn. The utility value or perceived instrumentality of Expectancy-Value theory is defined as the "importance of the task for some future goal that might itself be somewhat unrelated to the process nature of the task at hand" (Eccles et al., 1983, pp.89-90). For example, although some students show keen interest in engaging in meaningful learning that bounces from inner and intrinsic motivation, others see learning as a tool for grade promotion, achieving future-related plans including graduation from university and entering the job market with a college degree. In this regard, I raise an argument pertaining to the fact that in order to achieve distant future goals, the role of PsyCap as a motivational belief becomes important. Willingness to learn in senior school can often be driven by an internal will for knowledge acquisition, but also the utility value of the learning experience might influence students' motivation for future gains. In order to attain similar distant goals, PsyCap (in Study 1) was positioned to mediate this association between instrumentality of learning and respective learning outcomes. The conceptual rationale of this prediction assumed that PsyCap, which underpins motivational beliefs that are both present oriented such as self-efficacy and also future oriented or prospective emotions such as hope and optimism, influences learning outcomes by motivating students to persevere in the goal-pursuit behaviour. In the light of this argument, I contend that Expectancy-Value is often used as a motivational context within which students' future learning goals and cognitive engagement is interpreted. This perception of instrumentality represents the students' distant goals that guide and regulate their present and future learning behaviours and beliefs. When engaged in distant goal pursuit behaviours, students' PsyCap, together with their deep cognitive strategies, explains the respective learning outcome. Thus, the anticipated mediating role of PsyCap and deep cognitive strategies in predicting student learning outcomes within a learning model is examined by using Structural Equation Modeling (SEM). SEM, which is a statistical modelling technique, determines the validity of the proposed learning model, which suggests that students' perceived instrumentality of learning predicts their achievement via their PsyCap and deep cognitive strategies.

Moreover, as concluded from Study 2, hopeful individuals are more likely to use varied strategies and pathways to overcome specific learning obstacles. Implicitly, hopeful cognition will help students make positive appraisals about their goal attainment behaviour via agency and pathways (Snyder, 1994, 2000). However, there is limited empirical evidence on the nature of these strategies. For this reason, the experiment in Study 2 was designed to capture the provided and released strategies of the participants by using open-ended questions. Also, unlike the agentic thinking dimension of hope which is mostly associated with the self-efficacy theory of Bandura (1997), an individual's capacity and resourcefulness to generate pathways demands further investigation to consolidate its potential conceptual positioning within hope theory. For example, it is possible that some students are capable of exhibiting optimism and self-efficaciousness (agentic thinking) to engage in goal-directed behaviour; however, without possessing the relevant cognitive strategies, goal achievement behaviour can be significantly impeded. With regards to these cognitive strategies and pathways, the questions that were explored during the design of the Study 2 were: What is the nature of these respective strategies that students utilise in a learning environment and in fact situationally specific learning context, which in this case is the academic failing versus non-failing condition? Do students generate more strategies when faced with a failing learning condition? If yes, does academic hope moderate the effect of the failing condition on the utilisation of these strategies? Study 2 aimed to explore the wider theoretical underpinning of the above questions and further establish a theoretical foundation for the academic hope construct by looking into the way it operates within a manipulated failing learning condition.

Finally, unlike many approaches that investigate students' cognitive strategies and exclude their associated affective beliefs to understand their learning attainment, this research aimed to explore the synergistic influences of cognitive and motivational beliefs in shaping learning outcomes (Pekrun, Elliot & Maier, 2009). Previously, self-efficacy and attributional styles have long been investigated as influential factors in identifying performance outcomes. More recently hope has been introduced as a potential predictor of learning performance and examined as a cognitive/motivational process that is

comprised of two cognitive processes that function in parallel to the goal pursuit behaviour (Snyder, 1994; Snyder, Rand & Sigmon, 2002):

a. Agency that reflects the perceived motivational factor that prompts an individual to move towards achieving goals.
b. Pathways which is the perceived ability to generate effective routes to pursue and achieve goals.

According to this operationalisation, hope is not only a positive outcome-related belief or attitude but also a dynamic motivational characteristic (Phan, 2013) that has both motivational and cognitive elements, which leads students to develop positive academic expectancies and predict success during goal pursuit processes. The first element of hope, agentic thinking, is related to the individual's determination to pursue goal attainment behaviour, which is closely associated with the competency belief. The pathway element suggests the existence of potential workable routes for goal attainment and provides the individual with an envisioned set of plans for goal achievement. When they interact, agency and pathway components provide the student with the competency belief and the viable routes for goal achieving behaviour.

In summary, in the light of the reported data, theoretical references to Conservation of Resources theory, Snyder's Hope theory and Expectancy-Value theory was made to understand the conceptual underpinnings of PsyCap and academic hope within the postulated positive learning model and the experimental study.

1.7 Organisation of the Study

This thesis is divided into two distinct but related studies which in turn are spread over 6 chapters.

C**hapter 1:** This chapter provides a general overview, rationale and highlights the significance of the two studies and indicates the specific contextual consideration of the

research project. In addition, the chapter sheds light on the theoretical framework that will guide the interpretation of the results of the 2 studies.

Chapter 2: Chapter 2 explores the literature on PsyCap in academic settings. Whenever needed specific reference to other contexts is made to facilitate the understanding of the conceptual nature of the construct and the rationale of embedding it within a motivational and cognitive learning model. The conceptualization of PsyCap, its subscales and the conceptual distinctions amongst its subscales are also examined.

Chapter 3: In this chapter, the way students perceive learning as instrumental for their future distant goals is reviewed. In addition, a brief literature review on deep cognitive strategies and academic achievement is provided. The chapter ends with the presentation of the research questions, the 9 hypotheses of Study 1 and the hypothesized learning model of the thesis.

Chapter 4: The chapter introduces the research design, the sampling, the used measurements and the instruments, procedures, data analysis and the results of the correlational and the multivariate mediational analyses. At the end of the chapter the significant role of hope and optimism is reported and an introduction to Study 2 is provided. Also, at the end chapter 4, a preliminary discussion is provided on the observed relationships between the instrumentality of learning, PsyCap, cognitive strategies and achievement outcome.

Chapter 5: In Chapter 5, the background of Study 2 and a review of the literature on academic hope is provided. The research questions for Study 2 and the 2 hypotheses are outlined and the results of the study are reported. After analysing the collected data, the key findings from the experimental study are presented and interpreted.

Chapter 6: The last chapter reflects on the theoretical and practical significance of the findings from the 2 studies. The empirical results of the collected data are reviewed to

answer the postulated research questions. The major implications of the studies are highlighted and a proposal for future research is made.

Chapter 2
Psychological Capital

2.1 Introduction

Initially observed and often synonymised with human capital, many researchers have captured the role of psychological capital in organisational behaviour and human resource management within Conservation of Resources theory (Hobfoll, 2002) and Resource-based theory and literature (Barney & Clark, 2007). Although Luthans and colleagues (2007) first coined the term psychological capital, the construct had previously been used in various studies especially in research on family relations within the framework of emotional capital (Reay, 2004). The concept of PsyCap has emerged from the philosophy and scholarly work of the positive psychology movement originating with Seligman (2002, see also Seligman & Steen, 2004). Positive psychology aims to explore potential ways to energize motivational behaviour (Elliot, 1997). Consequently, PsyCap as a second-order positive motivational construct focuses on optimising human psychological and emotional functioning that envisages four positive facets: *self-efficacy, hope, optimism and resilience* (Luthans et al., 2007).

2.2 The Role of Positive Psychology in Learning and Achievement

Being motivated to learn, perform and achieve is a by-product of the interaction of different cognitive, psychological and emotional factors. A wealth of research findings has highlighted the adverse effects of psychological maladjustment, depression, stress and low self-esteem on the performance and academic motivation of students (e.g. DeRoma, Leach & Leverett, 2009; Woods & Wolke, 2004). In contrast to the adverse impact of negative experiences on learning outcomes, investigations capturing the impact of positive psychological self-beliefs on learning and motivational goals accelerated after Martin Seligman's (2002) proposal to stream a new scientific endeavour that capitalises on human potential with the aim of nurturing humans' capabilities and competencies, which he termed as "Positive Psychology". This "new" positive movement was preceded

by the pioneering work of Bandura (1993) on self-efficacy and Zimmerman's academic motivational model on self-regulated learning (Zimmerman, 1990) which laid the foundation for an *educational revitalization* that focuses on the power of positive psychology in explaining students' motivational behaviours (Seligman et al., 2009). The underpinning conceptual foundation of positive psychology has scattered into a myriad of constructs that has independently formulated the concept of positive psychology. These constructs include but are not limited to flow (Csikszentmihalyi, 1997), hope (Snyder et al., 2000), optimism (Seligman, 2006 and self-efficacy (Bandura, 1997). Moreover, these positive constructs and their impact on the learning behaviour of individuals and expected positive outcomes have been mostly explicated and studied non-interdependently. Consequently, there is a lack of structural understanding of what constitutes positive educational psychology and how positive psychological higher order constructs interact to influence learning outcome. In this regard, the current research aims to understand the structural and conceptual framework of positive educational psychology exemplified by psychological capital and its influence on learning outcomes by hypothesising that PsyCap occupies a central position in explaining the influence of future oriented motivation on students' learning outcomes.

On the other hand, this revitalization of positive psychology is encountered by a parallel movement that disputes the impact of positive psychology on human behaviour and learning outcomes on the grounds of pseudo-scientific methodology and illusionism (Hedges, 2009). For example, in clinical and therapeutic settings, practitioners and researchers have started to mistrust the accentuating impact of positive psychology on mental and physical health due to the unlimited inclination for displaying optimism without giving any consideration for individual differences for coping with changing circumstances, psychological weakness, difficulties and pathologies (Held, 2002). Seligman himself reminds us of the downsides of interpreting positivity that result from overenthusiastic feelings of over-empowerment (Seligman, 1993). However, away from the "unscientific" approach to positivism, I fundamentally believe that there rests a landscape of research and practice that should capitalise on human strengths in a "scientific way" which in turn enhances the positive psychology scholarship.

In this direction, Hackman (2009) argued that the field of positive psychology should more firmly grounded on theory since there are "too many constructs, with too little validity":

> There are, in these papers, lists upon lists and distinctions upon distinctions. What is not here, at least not that I can see, are serious attempts to explore the conceptual basis of the terms that are used, to probe how differently named but seemingly similar concepts relate to one another theoretically, or to establish empirically the construct validity of the concepts that are central to the findings reported (p.311-12).

Aspinwall and Staudinger (2003) also sought to explain the dilemma of imbalance between superlative positivism and negativism and their respective dependency through empirical research, observation and evidence to understand whether and how positive and negative experiences depend on each other and work together:

> Thus, a call for the scientific study of such positive states as joy, play, hope and love-of what is positive, successful, and adaptive in human experience-should not be misunderstood as a call to ignore negative aspects of human experience. That is, a psychology of human strengths should not be the study of how negative experience may be avoided or ignored, but rather how positive and negative experience may be interrelated… Indeed, some philosophical perspectives suggest that the positive and negative are by definition dependent on each other; that is, human existence seems to be constituted by basic dialectics. (pp.14- 15).

By having in mind the critical role of positive motivational belief in explaining learning outcomes, the following section outlines the theoretical conception of psychological capital and the elementary units of its formation.

2.3 Conceptualisation of PsyCap

According to Luthans and Avolio (2009), there are three inclusion criteria to embrace positive motivational behaviours under the second-order construct PsyCap. The components or the first-order constructs of PsyCap:

1. Must be theory driven and measurable
2. Must have state-like rather than trait-like nature
3. Must have a positive performance impact

As a second order latent variable, PsyCap represents the hypothesis that the seemingly distinct but related constructs can be accounted for by one or more common underlying lower-order latent variables (Chen, Sousa & West, 2005). In this regard, self-efficacy, hope, optimism and resilience converge at a higher level and predict a common latent variable, PsyCap. By having in mind the three theoretical foundations of the subscales mentioned above, Study 1 aimed to first investigate the conceptual validation of PsyCap as a second order construct to add robustness to its psychometric properties.

In addition, to be a second order construct, PsyCap is also conceived to be a multidimensional composite latent variable which represents the shared variance between the four first-order constructs or facets which have been conceived and measured in grounded theory and research (Luthans et. al, 2007). Theoretically, the incorporation of the four facets of PsyCap as a composite system of *coping mechanisms* with latent common *psychological resources* transcends the significant influence of individual facets and impacts the positive outcome synergistically (Avey et al., 2011). Hence, a third characteristic that underpins the conceptualization of PsyCap is its *synergistic effect*. Despite the influence of individual facets on different desired outcomes, such as academic performance & achievement motivation (e.g. Bandura & Locke, 2003; Day, Hanson, Maltby, Proctor & Wood, 2010; Hoy, Tarter & Hoy, 2006; Lane & Lane, 2001), it is believed that the emergence of these four positive behaviours as a higher-order construct will result in synergistic effects where the whole is assumed to have a greater influence than the sum of its parts (Luthans, Youssef & Avolio, 2007, p.186).

In their review on the psychometric properties of PsyCap, Dawkins et al. (2013) summarised the empirical literature of PsyCap and affirmed the state-like nature of the construct derived from multiple research including longitudinal studies and supported the convergent and discriminant validity of the scale. Recommendations for future research also suggested that should be directed towards further conceptualisation of PsyCap, its factor structure, its nomological network and finally a deeper investigation into the interplay of individual facets and its independent influence on outcome variables. Based on the conclusion drawn by Dawkins et al. (2013), the current study aimed at exploring the synergistic effect of PsyCap on learning behaviour and outcomes. Consequently and theoretically, I hypothesised that PsyCap as an amalgamation of the four facets including self-efficacy, hopeful agency and pathway, optimistic outlook and resilient behaviour might explain students' learning outcomes above and beyond the individual facets. Luthans, Avolio, Avey and Norman (2007) found that PsyCap has a relatively stronger relationship with employee performance than each of the individual facets of self-efficacy, hope, optimism and resilience. This conclusion is explained by the *common source* motivational propensity force that is found underneath each facet that ties these forces to influence performance outcome. Also, despite the independent and discriminate validity of each facet, these individual facets act together and exhibit themselves as a second-order broader positive construct, which characterizes PsyCap as first order and multidimensional construct. For example, students who are equipped with a high level of PsyCap will display high self-efficacy while executing a learning task meanwhile they might also utilise hopeful learning pathways for executing and achieving learning goals. Moreover, the same students encountering academic challenges and setbacks who are psychologically shielded with high levels of hope and resilience will bounce back from adversities and seek various pathways to achieve their goals. Thus, the common underlying forces of the four facets will go above and beyond each facet in explaining achievement level. Moreover, by having in mind the *fragility* of each facet when taken independently, one can assume that PsyCap as a higher order construct will have a stronger influence on learning outcomes since it represents students' positive appraisal of circumstances and probability for success based on motivated effort and perseverance (Luthans et al., 2007). In this regard, Bandura (1998) without directly referring to

PsyCap as a second order construct, has explained the potential interaction of positive motivational beliefs by concluding that "evidence shows that human accomplishments and positive well-being require an optimistic sense of personal efficacy to override the numerous impediments to success" (p.56)… "[where] success usually comes through renewed effort after failed attempts. It is resilience of personal efficacy that counts" (p. 62).

In order to better understand the conceptualisation, properties and relationships of PsyCap, a thorough review of the construct under examination becomes essential. Scientific discourse on the concept of "capital" was spearheaded by the French sociologist/philosopher Pierre Bourdieu (Nash, 1990). In his many works on cultural reproduction which he believed accentuated inequality, Bourdieu argues that economical/financial, social and cultural capitals cause unequal distribution of society's resources (Figure 2.1)

Figure 2.1: Four Kinds of Capitals

Traditional Economic Capital	Human Capital	Social Capital	Positive Psychological Capital
What you have	What you know	Who you know	Who you are
Finances Tangible Assets (plant, equipment, parents, data)	Experience Education Skills Knowledge Ideas	Relationships Network of Contacts Friends	Confidence Hope Optimism Resilience

Source: Luthans, Luthans & Luthans, 2004. Positive psychological capital: Beyond human and social capital.

Few studies have previously observed the role of emotional capital in school setups and the way it is conceptualised (e.g. Zembylas, 2007). However, it was not until Luthans and his team coined the term "Psychological Capital" that the phenomenon started to invite more systematic and empirical attention to understand its resourcefulness. In fact, the conceptualisation of PsyCap is considered to be the continuation of the traditional competencies of economic and social capital, which is often synonymised with human capital. However, unlike human capital, the robust measurability of PsyCap has facilitated its scientific and methodological expansion.

In its conceptualization, Luthans defined the construct as "the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement" (Luthans, 2002b, p. 59). According to this definition, PsyCap is an amalgamation of the four capacities that is based on theory and research with valid measurement. PsyCap has systematically yielded positive outcomes on individual performance indicators and wellbeing mostly in organisational management and psychology (Luthans, 2002, Luthans & Avolio, 2009). At the time of its conceptualisation, Luthans and the team developed a higher-level perspective that focuses on the construct as a whole rather than its individual levels. It was argued that in order to have influence on optimum positive outcome, the holistic effect of PsyCap as the combination of the four sub-facets should be examined instead of its individual facets (Luthans and Avolio, 2003).

In this regard, preliminary studies have been carried out to examine the way students' PsyCap is associated with achievement and "success" during periods of uncertainty. For example, Demerath, Lynch and Davidson (2008), in an ethnographic study, examined PsyCap of high school students and highlighted important observations. The authors concluded that students with high levels of PsyCap show interest in navigating future employment markets for economic success and aspiration for personal advancement in competitive industries. Most likely students utilise their previously mastered efficacious learning experiences and develop competency beliefs that envision personal growth and advancement. These students see themselves as "ongoing projects" (Demerath et al.,

2008, p. 279) and report superior work ethics by regulating their daily learning practices for personal progress. Finally, unlike the above-mentioned ethnographic study that adopted a rather general perspective to define psychological capital such as predispositions to exert self-control, self-advocacy skills and keen awareness of cultural capital, in Study 1 I examine the conceptual nature of PsyCap and its respective positive consequences in a more *specific* learning paradigm. Examining the association of psychological capital with successful learning in a more specific learning and motivational framework helps to draw empirically more plausible conclusions. As such, by using CFA and SEM I aimed to develop a more "scientific understanding" of the underlying factors that form PsyCap and its association with positive learning outcomes. For this reason, Study 1 is comprised of two different phases. At the first stage, construct validation is carried out by using CFA to discern the empirical properties of PsyCap as an amalgamation of four subscales. Afterwards, the influence of PsyCap within a cognitive and motivational perspective is examined in the hypothesised learning model.

2.4 Review of Academic PsyCap in Educational Literature

With the promising research findings that stress the role of PsyCap in predicting positive performance in organisational setups at individual and group levels (Gooty, Gavin, Johnson, Frazier, & Snow, 2009) there is an increasing though still scarce research interest in examining the role of PsyCap in educational and learning environments. As will be reviewed below, the scope of these studies is limited to correlational investigations that accentuate the positive association of PsyCap with academic achievement. However, beside the bivariate correlational studies, there is limited conceptual embedding of different learning and motivational perspectives into explaining the impact of PsyCap on attainment level. Most of the scope of these research examinations has dismissed a rigorous examination into the dynamics of cognitive and motivational foundations of learning. The aforementioned observation might be attributed to the fact that the construct of PsyCap in positive psychology is at an early stage of its empirical enquiry, which was initially observed in organisational rather than educational psychology. Also, some might raise conceptual arguments that question the

contribution of PsyCap on positive learning outcomes and ascertain it as empirically dubious. This line of argument reflects the general scepticism that positive psychology has previously received in comparison to the individual subscales of PsyCap that have a long history of well-established influence on successful learning. However, it is contended that PsyCap has a synergistic effect and it can predict successful performance above and beyond its individual subscales (Luthans et al., 2007).

As mentioned, the following section reviews emerging studies that mostly pertain to the positive influence of PsyCap on academic achievement in a higher education context. To the best of my knowledge, PsyCap is not yet examined in a high school environment, which for all the reasons indicated in Chapter 1, constitutes a critical stage of students' cognitive and motivational development. For example, Luthans et al. investigated the PsyCap of undergraduate students who were enrolled in business courses and observed PsyCap's predictive value on the official GPA scores with a positive significant relationship $r = .281$, $p < .01$ (Luthans, Luthans & Jensen, 2012). When the authors used stepwise regression with academic achievement considered as the dependent variable, PsyCap explained 7% of the variance on the outcome variable. This study provides important evidence for the explanatory role of PsyCap in predicting learning outcome. In addition to PsyCap, students' work ethics and engagement measured through number of hours dedicated for schoolwork increased the explained variance by an additional 5%. Jafri (2013) has drawn a similar conclusion with a population of students from a management college. The researcher indicated that significant differences exist between high versus low performing college students' PsyCap. When additional analysis was carried out, the high versus low students reported significant differences in three out of four subscales of the PsyCap scales (self-efficacy, hope and resilience) which indicated that high performing students exhibited motivational beliefs and resourcefulness not only on the second-order construct but also on its individual subscales. Similar conclusions have been reported in other studies. For example, Tjakraatmadja and Febriansyah (2007) have found that PsyCap has positive significant influence on the students' GPA. More recently, You (2016) argued that similar to employees, students need to be empowered in order to develop a sense of responsibility and meaningfulness towards their learning. In

this regard, the researcher contested that university students who are empowered are more likely to achieve learning goals and accordingly PsyCap was posited to act as an antecedent for learning empowerment and engagement. In You's (2016) study, the results from 490 Korean university students suggested that PsyCap had a significant positive relationship with learning empowerment and indirectly enhanced students' engagement with their learning. Moreover, in a two-wave cross-lag study, Siu, Bakker & Jiang (2014) in two consecutive studies evaluated the reciprocal relationship between university students' PsyCap and their respective study engagement behaviours. This plausible association was explained by the Conservation of Resources theory which argued that students' competency beliefs motivate them to dedicate more time and effort in studying with perseverance. In turn, COR also proposes a reverse relationship where students who have successfully engaged in their learning meaningfully are more likely to receive positive and constructive feedback and subsequently experience enhanced self-efficacy, hopeful thinking, optimism and resilience.

The preliminary promising findings that have attributed PsyCap to positive performance pave the way for more in-depth analysis to examine the potential mediating role of PsyCap in students' learning, cognition and motivation. The yielded results support the positive association between PsyCap and students' achievement outcome; however, in order to gain further conceptual insight into the mechanism involved, I proposed mediational analysis to understand the formation of the relationships between PsyCap and successful learning. The antecedents that underpin the formation of PsyCap are considered conceptually and empirically integral in order to solidify not only the positive influence of PsyCap on desired outcomes but also the factors that contribute to its formation and development. This line of argument is plausible especially by having in mind that PsyCap is a malleable construct with the strong potential for growth and enhancement through interventions. In another words, I argue that the way students perceive their learning tasks as instrumental for future gains has a direct influence on PsyCap. For this reason, carrying out a cross-sectional and bivariate correlational study provide an insight into the way PsyCap relates to positive learning outcomes. At the same time, more empirical studies are required to understand the factors that precede the

formation of PsyCap. For example, in the history of developing self-efficacy beliefs, four different sources of information have been outlined that give rise to self-efficacious behaviour (Bandura, 1977, 1982)

1. Enactive mastery experiences that students have previously engaged in including experiences of success and failure on tasks that have similar difficulty
2. Vicarious experience and modeling with specific attention given to the success or failure of similar learning models
3. Verbal persuasion that comes from significant resources
4. Physiological and emotional arousal that underlie individual's functioning

Although the extent of self-efficacy development relies on the way these information sources are processed, nevertheless empirical findings show that self-efficacy stems primarily from these four different sources. Unlike the antecedents of self-efficacy, currently, at least, further scholarly work on PsyCap is in need of theoretical and empirical expansion to envisage a "model" that explains precedents and subsequently its positive influence on successful learning. In the literature, there is currently a single empirical analysis (Avey, 2014) that has examined the antecedents pertaining to the formation of PsyCap. Most of the previous research has focused on the predictive power of PsyCap on employees' wellbeing, satisfaction and performance. However, equally important to the consequences of PsyCap is the set of attitudes, beliefs and motivational propensities that give rise to the formation of PsyCap. To close this gap, Avey (2014) carried out a field study with 1264 engineers and technicians and later replicated the study with 529 Chinese technology employees. The objective of the two studies was to ascertain the preceding factors that pertain to the enhancement of PsyCap. The studies concluded that individual differences such as the proactive personality and core self-evaluation of the participants emerged as the strongest predictor and accounted for 45% and 24% of variance in PsyCap, respectively. In Study 1, self-esteem and proactive personality as part of individual differences categories emerged as significant and independent predictors of PsyCap which suggest they explained certain variance in

PsyCap formation. Moreover, supervision category explained 32% of variance with authentic and ethical leadership predicting unique variance in PsyCap. Finally, the category of job characteristics in Study 1 (task complexity) explained 12% of variance in PsyCap (Avey, 2014). Although the mentioned antecedents were set a priori that were initially founded on theoretical and conceptual grounds, the results shed light on the formation of PsyCap not only as an individual psychological characteristic but also as a response to the environmental cues, in this case task complexity. In fact, task complexity was the only non-demographic contextual factor that was defined to potentially influence PsyCap and predicted 12% of the total variance of PsyCap in Study 1. This conclusion indicates that PsyCap is not only influenced by individual variances and characteristics but also with the contextual and structural dynamics within which individuals think, learn and feel. Avey's (2014) study on the psychological antecedents of PsyCap is conceptually critical for two reasons. First, by having in mind that one of the main properties of PsyCap is its potential for development and growth, Study 1 opens a new landscape for further researchers to explore the "what" and "how" components of PsyCap's development. This evidence suggests that teaching and learning practices can be moulded to focus on the corresponding antecedents of PsyCap and ways of developing it. Second, the influence of task complexity as a contextual factor on PsyCap formation suggests that students' PsyCap can continuously interact with their learning environment and respond to contextual cues. In order to look into this unearthed area more closely, Study 1 of the current thesis has stipulated a learning model which hypothesises that students' PsyCap is influenced by the way they perceive the value of their learning, namely perceived instrumentality and in turn this perceived instrumentality predicts achievement outcome via PsyCap and deep cognitive strategies. This model is introduced at the end of Chapter 3 (Section 3.4, Figure 3.1).

As previously mentioned (Bandura, 1986; Pajares, 1996; Zimmerman, 2000), there are substantial empirical findings that have consolidated the factors that predict self-efficacy especially with the advancement of Bandura's theorisation of self-efficacy; however, the remaining three facets of PsyCap have not received sufficient scholarly attention to determine the predictive variables that shape hope, optimism and resilience. As the

results of Avey's (2014) study suggest, the students' PsyCap is the by-product of complex situational and cognitive interactions. Thus, the inclusion of motivational factors (perceived instrumentality of learning) as a determining predictor of PsyCap will add empirical rigor to the study of positive psychology in a learning context. For one essential reason, previous research has fallen short in examining the antecedents of PsyCap and the factors that influence its formation. Instead, previous empirical studies have examined PsyCap as a predictor of positive performance without giving much attention to examine PsyCap as mediating or outcome variable.

To summarise, empirical observations that are bivariate in nature fall short in explaining the underpinning influence of PsyCap on students' learning processes. More specifically, the impact of PsyCap on students' psychological functioning, motivational attributes and the cognitive strategies they use in the classroom is somehow understudied. Hence, investigating the role of psychological capital as a mediating variable that is influenced by the perceived instrumental value of learning and its association with deep cognitive strategy to influence performance outcome will help us better understand the role of positive beliefs in achievement motivation.

After reviewing the role of PsyCap in academic contexts and its influential role in predicting achievement outcomes, it is plausible to gain further theoretical and empirical insight into the individual subscales of each construct: self-efficacy, hope, optimism and resilience. The review below will help develop understanding of the role of each subscale in motivational behaviour and their potential interdependency and interaction in predicting successful learning outcomes.

2.5 Subscales of PsyCap

With the systematic positive observations that are attributed to PsyCap, I strongly believe in cultivating students' minds with PsyCap as a positive motivational disposition that enhances their learning experiences. However, I contend that a closer empirical exploration of its *elementary units*, namely self-efficacy, hope, optimism and resilience

should be carried out. Since PsyCap is a newly emerging second-order multidimensional construct, some might find its conceptualisation relatively ambiguous. Unlike self-efficacy, hope, optimism and resilience that are clearly defined as competency beliefs, the conceptual abstractness of PsyCap as a higher-order construct necessitates a different approach to understanding. Moreover, the scholarly attention that individual subscales have received helps us scrutinize the underlying foundation of PsyCap. The specific contribution of individual subscales in respect to motivation and achievement facilitates the identification of the underlying formulation of PsyCap and consequently its distinguishable synergistic effect on performance. For these reasons, it becomes theoretically plausible to explore each subscale of the multidimensional construct separately before positing it in as an integrated higher-order construct.

2.5.1 Self-Efficacy

Primarily, compared to the remaining three subscales, self-efficacy as a positive motivational construct has received extensive scientific and empirical attention. It is operationalised as an individual's self-belief and appraisal in being capable of executing goal-oriented actions to succeed in certain situations (Bandura, 1997). According to Bandura (1986), self-efficacy together with outcome expectations positively influences student's learning motivation; however, self-efficacy emerges as a stronger predictor due to the fact that outcome expectation mostly relies on self-efficaciousness of the student. In this regard, there is much research indicating the role of self-efficacy as a component of an individual's self-belief system that acts as a significant predictor of achievement motivation (Pajares, 2003), deep learning strategies (Ferla, Valcke & Schuyten, 2008) and self-regulated learning (Zimmerman, 2002). In fact, students' self-belief about their competence to execute certain tasks, perform and be motivated to learn has occupied a profound place in varying classical motivational theories such as Self-Worth theory (Covington, 1984), Attribution theory, (Weiner, 1979) and Expectancy-Value theory (Eccles & Wigfield, 1995). In addition, accumulated research has established the positive relationship between academic self-efficacy and the use of meaningful learning approaches and cognitive engagement (Kizilgunes, Tekkaya & Sungur, 2009; Pintrich &

DeGroot, 1990; Walker, Greene & Mansell, 2006); in addition to its contribution to achievement with a recent meta-analytic study that has reported large effect size between academic efficacy and performance (Richardson, Abraham & Bond, 2012). In sum, one significant finding that emerges from these theoretical and empirical studies is the critical role of self-efficacy in explaining achievement goals and consequently learning outcomes.

Self-efficacy focuses on the *present* ability belief of individuals to perform with the essential goal of succeeding at a task, which varies in strength, level of difficulty and generality. For example, Eccles and Wigfield (1995) in the Expectancy-Value model conceptually distinguished between ability beliefs and expectancy for success and valuing of academic tasks by attributing efficacy to self-beliefs that focus on the *present ability* to engage in and complete a learning task whereas expectancies mostly focus on the future (Wigfield & Eccles, 2000: p 70). Moreover, students' choice, persistence and academic performance is directly explained by their self-belief about task execution and task value. Hence, self-efficacy reflects the current streaming belief of an individual's ability to be motivated to learn and perform.

2.5.2 Hope

Unlike self-efficacy, the second element of PsyCap, *hope*, is a future oriented or, as Pekrun (2006) classified it, *prospective* anticipatory emotion that is believed to influence individual's attainment of goals and lifetime plans. In terms of its conceptual properties, Bandura (1986) argues that self-efficacy has a stronger influence on motivation and action in relation to *proximal* goals rather than distant goals due to the fact that attaining immediate goals validates students' ability beliefs whereas due to the remote nature of some future goals, the validation of self-efficaciousness for a learning task is delayed and remotely realised. Meanwhile, Social-Cognitive theory does not shadow the role of distant goals in facilitating goal-pursuit behaviour and motivation in which self-efficacy plays a critical role. For example, Bandura indicates that "personal development is best served by combining distant aspirations with proximal self-guidance" (1986, 476).

Hence, in addition to incorporating self-efficacy that has strong predictive value on distant goals, hope maintains a predictive property of future outcome.

Hope is mostly examined in spirituality, counselling and therapeutic research and practices (e.g. Bunston, Mings, Mackie & Jones, 1996). It is traditionally defined as the positive force that engages individuals in enhancement activities and it represents the positive belief and perception that goals are achievable (Frank, 1968). More recently, Snyder and his colleagues conceptualised hope as *goal-directed thinking* in addition to a "cognitive set that is based on a reciprocally derived sense of successful *agency* (goal-directed determination) and *pathways* (planning to meet goals)" (Snyder et al., 1991, p.571). Snyder et al. suggested that agency thought is translated through the ability to initiate and maintain certain tasks in order to pursue specific goals whereas the pathways dimension is the ability to create workable routes towards attaining these goals (Snyder et al., 1996). In fact, he based his conceptualisation of hope on the trilogy of goals, agency and pathways (Snyder et al., 2002).

In this regard, previous findings have indicated that adolescents with high levels of hope display better adjustment, better life satisfaction and lower levels of emotional stress compared to others with lower hope levels (Gilman, Dooley & Florell, 2006). Although hope as a positive cognitive paradigm has been studied less compared to self-efficacy, its predictive value has been reported for academic achievement (Snyder et al., 2002) and problem solving and coping with academically stressful situations (Chang, 1998). The association between hope and academic performance is explained by an individual's determination that set goals are attainable and a belief that learning strategies can be utilised to pursue these academic goals (Day et al., 2010). In the same direction, hope in these aforementioned studies has been conceptualised as a *cognitive* goal-related perception about the future rather than only a positive *affective* or *emotional* belief. Consequently, the value of hope in academic achievement is seen in its power to create and recreate pathways to achieve goals even after experiencing drawbacks. Hence, individuals with high hopes envision learning goals, develop learning strategies (agency) to attain these future goals and construct various cognitive routes (pathway) to overcome

goal-blockages on the longer path of achievement (Snyder et al., 2002). On the other hand, in the face of pitfalls and failures, individuals with low-hope cognitions become less motivated for learning and consequently less motivated to pursue future goals.

By having in mind the positive association between hope and academic learning outcomes, it is suggested that hope together with the other components of the multidimensional construct PsyCap can influence the learning achievement of students. The underpinning explanation behind this association is found in the motivational and cognitive value of hope in rewarding individuals with the willpower and determination to continue pursuing goals that are specifically distant and future oriented. Conceptually it becomes imperative to maintain both the agency and pathway subscales of hope in goal attainment behaviour. Thus, as Irving, Snyder & Crowson (1998) concluded, "in the absence of the strategies to be implemented, goal-directed motivation is useless" (p. 197).

2.5.3 Optimism

Thirdly, similar to hope, *optimism*, as the third dimension of PsyCap is a future-oriented belief that has a specific theoretical conceptualisation. Optimism is traditionally defined as the continuous striving to attain certain goals by attributing achievement to positive outcome expectations and engagement in goal-oriented actions (Scheier & Carver, 1985). Individuals with an optimistic worldview and beliefs have developed a perception of autonomy and consequently motivation for engagement in performance tasks. For example, in one study students with a high level of optimism were more likely to display self-determined motivation compared to pessimistic students (Shogren, Lopez, Wehmeyer, Little & Pressgrove, 2006). Moreover, Pajares (2001) observed that academic confidence, task-goal orientation and self-regulated learning are associated with student's optimism. Hence, unlike the affective aspect of optimism that focuses merely on a self-representation style and is often misinterpreted as illusionary, intellectual optimism leads to motivational drives towards anticipating future goals as potentially positive and achievable (Carver & Scheier, 1990). However, despite the

research-based evidence on the positive outcomes associated with optimism and pursuit of future goals, it is also plausible to deduce that over-optimism can in turn cause maladaptive thoughts and actions and consequently lead to irrational behaviours (Oettingen, 1996). Students might appraise unrealistic goals as achievable and consequently engage in goal pursuit behaviours that are improbable and instead they misplace their cognitive resources and strategies that otherwise can be utilised for achieving more realistic goals and outcomes. Regarding this type of optimism, Seligman (1991) has proposed that you can "choose not to use it, when you judge that clear sight or owning up is called for. Learning optimism does not erode your sense of values or your judgment…Optimism's benefits are not unbounded. Pessimism has a role to play…we must have the courage to endure pessimism when its perspective is valuable" (p.292). Thus, the merit of optimism that PsyCap captures is the positive outcome anticipation that motivates the individual to attain a future learning goal.

2.5.4 Resilience

Fourthly, *resilience* that constitutes the fourth dimension of PsyCap is conceptualised as the capacity to constructively resist and adapt to internal and externally controlled environmental negative experiences and adversities (Rutter, 2006). Earlier research evolved following the work in the field of developmental psychology by Garmezy (1985) who observed vulnerable children and the way they exhibited innate disposition to resist external stress. More recently, with the shift towards referring to resilience as a resourcefulness skill to cope with stresses and adversities, there is a growing interest in emphasizing its role to enhance students' mental wellbeing in schools which in some cases has resulted in positive outcomes such as improvement in students' depression symptom scores, school attendance and attainment in English (Challen, Noden, West & Machin, 2010, 2011). More recently there is a supporting evidence on an emerging conceptual and empirical differentiation between academic buoyancy, resilience and adaptive coping processes. For example, Putwain, Connors, Symes & Douglas-Osborn, (2012) concluded that while buoyancy is inversely related to test anxiety it is unrelated to coping mechanism of the students. Meanwhile academic buoyancy explains significant

proportion of variance in test anxiety beyond the variance explained by the students' coping. Moreover, Martin and Marsh (2009) argue that the concept of academic buoyancy refers to the characteristics of coping with less acute adversities that are natural course of schooling such as poor grades whereas traditional resilience refers to the non-ordinary setbacks and pressures such as chronic bullying and violence. However, in the current study no major conceptual differentiation is taken. The underpinning rationale of adopting an undifferentiated approach has a conceptual explanation. According to the argument of Martin and Marsh (2009), academic resilience is hierarchically higher than academic buoyancy since resilient students who have the predisposition to cope with intense and severe adversities have also the competency and resourcefulness to cope with less severe academic stresses such as underachievement. In fact, Martin and Marsh (2009) assume that "resilient students are likely to also be buoyant" (p.359). For this reason, the following study assumes that resilience as a first-order construct is the students' resourcefulness to be able to exercise certain control over the anticipated outcomes of their circumstances and develop a sense of action-outcome contingency to persist in attempting to adapt to the adversities and eventually succeed in mitigating the drawbacks. This perspective is in line with Luthan's et al. (2007) original work on the conceptualization of PsyCap.

To summarise, by adding self-efficacy as an ability belief to achieve immediate goals to hope, optimism and resilience as future-oriented prospective motivational beliefs, it can be concluded that PsyCap as a multifaceted construct is an *amalgamation* of positive psychological and motivational beliefs that is expected to influence successful learning outcomes. Although the aforementioned reviewed literature highlighted the role of each dimension of the construct separately, it is hypothesised that PsyCap exists as a latent construct and is manifested as a combination of its different dimensions (Luthans, Youssef & Avolio, 2007). Meanwhile, Luthans and his colleagues (2007) argued that PsyCap as a compound variable has a stronger relationship with desired outcome variables as compared to the individual four components that comprise it. Thus, despite the impact of individual facets on different desired outcomes, such as academic achievement and achievement motivation (e.g. Bandura & Locke, 2003; Day et al., 2010;

Hoy, Tarter & Hoy, 2006; Lane & Lane, 2001), it is believed that the emergence of these four positive behaviours as a higher-order composite construct will result in synergistic effects where the whole is assumed to have greater influence than the sum of its part (Luthans, Youssef & Avolio, 2007, p.186).

2.6 Conceptual Distinction Among the Subscales of PsyCap

The current study does not aim to evaluate, contradict or pit one motivational component of PsyCap over the other. Instead it is assumed that there are some conceptual differences among the sub-constructs and consequently distinctions in their potential implications.

2.6.1 Hope and Optimism

In addition to the significant influential role of hope and optimism on an individual's self-appraisal and the positive representation of a future event, the two constructs have received conceptually similar and differing theoretical explanations. Due to the positive expectations of future outcomes, Bruininks and Malle (2005) empirically differentiated them in three studies in the light of their *anticipatory value*. The authors observed that during situations that were dominated by an awareness of optimism, optimistic participants exercised and perceived greater control over the expected outcome compared to hopeful individuals who in turn focused on the future outcomes of the task that demanded lesser control and longer engagement. Moreover, optimism is primarily concerned with the positive expectancy that an individual holds towards the future whereas hope is the positive outlook that can be potentially attained through the individual's *will and way* (agentic thinking and viable routes). In contrast to the concept of hope, which is the ability to conceive goals and pathways to attain desired outcomes despite obstacles and have the motivation to use those pathways to achieve goals, optimism is about the positive appraisal of the future, characterised by expectancy that outcomes are *generically positive* (Bryant & Cvengros, 2004). To summarise, hope and optimism are future-oriented prospective cognitive self-beliefs that help individuals develop positive expectations with varying characterisations. In this regard, in real life

circumstances, some students might generically describe themselves as optimistic about the future specifically with their performance outcomes and achievement. However, the positive associations with optimism in terms of self-representation and self-appraisal deserves further empirical investigation. For example, although some students might expect positive outcome of their performance, they might fail to develop or endorse a set of pre-planned pathways for goal attainment behaviour.

2.6.2 Hope and Self-efficacy

Beside the distinction between hope and optimism, there is an observed conceptual overlap between hope (specifically the agency subscale) and self-efficacy where self-efficacy is more closely related to positive dispositional cognitive appraisal of future outcomes, whereas pathway subscale of hope, in turn, is linked to developing the positive self-belief to possess the pathway for goal attainment (Bryant & Cvengros, 2004). For example, self-efficacy is related to the expectancy and perception that an individual has the ability to execute a task without necessarily assuming that this motivational belief will lead to goal attainment. As was stated by Snyder (2002), "an important difference here lies with the words *can and will* [italics added], with the former referring to the capacity to act and the latter reflecting the intention to act-with intention being more willful" (p.258). In addition to the agentic thinking which is the efficacious belief in generating action, pathways concern the planning component in eliciting goal-directed behaviour and initiating action. In fact, the latter part was the unique contribution of Snyder beyond what was originally conceptualised by Bandura in his Self-Efficacy theory. For example, a student might not only have the strong belief in developing a long-term plan to succeed in upcoming external examinations but he or she might also be capable of generating the approaches or strategies needed to pass in these exams. On the opposite side, he or she might envision the necessary learning approaches and study plans yet fail to develop the agentic thinking and motivation for better performance. In order to ensure goal directed behaviour, both the agentic and pathway subcomponents should become mutually functional. Thus, hopeful students find multiple pathways and approaches to attain their learning goals and meanwhile obtain the self-efficacy to

execute the task with the aim of successful achievement (Snyder, 2002).

In conclusion, one of the plausible arguments raised in the current study on PsyCap and positive educational psychology in general is the reiteration and proposal of patterns of achievement through resourceful motivational beliefs. In addition, despite the factorial distinction of each variable, it is assumed that PsyCap is an important motivational belief and performance-enhancing construct which explains significant variance in the learning processes and outcome of high school students synergistically.

2.7 Characterisation of PsyCap: State-like Property and Malleability

Based on the notion that PsyCap maintains various characteristics such as malleability and synergetic effect, this section reviews the literature on micro-interventions (Luthans, Avey, Avolio, Norman & Combs, 2006; and more recently web-based intervention, Luthans, Avey & Patera, 2008) that have aimed to ameliorate individual's performance. In addition to being a multidimensional, higher order and parsimonious positive behavioural construct, there is growing evidence on the potentiality of PsyCap to be developed through training and intervention strategies (Demerouti, van Eeuwijk, Snelder, & Wild, 2011). As introduced earlier in Chapter 1, one of the major criteria adopted to include positive constructs into the definition and operationalisation of psychological capital is the malleable property of its facets (Luthans, Youssef & Avolio, 2007). In this regard, for example, Luthans, Avey, Avolio & Peterson (2010) carried out an experimental study and randomly assigned 80 managers to treatment versus control groups. Participants in the treatment group received a short training session that lasted for two hours which was initially designed to enhance their self-efficacy, hope, optimism and resilience and consequently their overall PsyCap. After the intervention, all the participants were assessed on multisource rating of their performance including self-rated 4 item performance measure such as "How would you rate your performance/ effectiveness as compared with your peers" and manager rated performance evaluation a week before and after the training. The results indicated that with intervention and training participants in the experimental group demonstrated a significantly higher level

of each resource of PsyCap and overall PsyCap compared to the control group both on self-rated and manager-rated performance. The results of this study provided preliminary evidence on the malleability of PsyCap as a construct that can be expanded via training and intervention. On the other hand, although the results of these studies indicate an increased level of PsyCap and performance after specific training, questions that pertain to the durability of the improvement should also be addressed. The impact of similar short training sessions as evidenced by increase in performance outcome might in fact vary and fluctuate with time due to environmental changes especially if the nature and scope of the programme merely focuses on ameliorating part of the PsyCap such as self-efficacy or hope. Thus, further follow-up observation becomes critical to observe any regression that might occur due to unforeseen negative circumstances or failing conditions. In order for PsyCap to flourish and progress, the way of maintaining this progress should also be examined since merely capturing a set of positive motivational beliefs and resourcefulness might not have persistent positive impact on outcome performance on longer durations. Secondly, the sequence of providing certain PsyCap enhancement training sessions assumes the presence of a certain set of psychological, behavioural and cognitive antecedents. Until recently, no major empirical work has been dedicated to examining the nature of these antecedents and prior experiences of an individual's learning activity and the way it contributes together with training to develop PsyCap.

Furthermore, in order to test the state-like and malleable nature of PsyCap which is hypothesised to be modifiable with respect to situational cues (Luthans et al., 2007), a longitudinal latent growth modelling analysis indicated a within-individual variation in psychological capital and this change was positively correlated with the employees subjectively and objectively reported performance outcomes (Peterson, Luthans, Avolio, Walumbwa & Zhang, 2011). In the same direction, some studies have provided empirical evidence on the convergent and discriminant validity of PsyCap in contrast to other variables such as "core self-evaluation" and "Big-5" personality characteristics (Avey, Luthans & Jensen, 2009). While examining the influence of PsyCap on positive work outcome after controlling for the personality traits, Big-5, it was observed that PsyCap

has a unique variance on organisational outcome (Choi & Lee, 2014). Conceptually, the rationale of examining the unique variance of PsyCap is to discern the influence of each construct of PsyCap against Big-5 on perceived performance since the two phenomena share a common positive approach to explain performance outcome especially the conscientiousness, emotional stability and openness-to-experience traits of Big-5. A primary reason for the unique variance of PsyCap is its proximal association and influence on performance compared to the distant impact of personality traits. Also, the influences of Big-5 personality traits on outcome performance are general, by definition (Locke & Latham, 2004; see also, Judge et al., 2002). In sum, as will be discussed below, similar to its sub-facets, PsyCap as an elastic construct can be moulded with respect to the situational cues of the environment. Previous conclusions were also drawn with regards to within-person variability of personality of individuals as a response to encountered situations (Beckmann and Wood, 2017).

Similar to the malleable property of PsyCap, it is also plausible to discern the malleability of its individual subscales since these subscales lay the foundation of the higher-order concept, PsyCap. However, unlike PsyCap, the reviewed literature stipulates more rigorous and consistent conclusion on the malleability of the subscales: self-efficacy, hope, optimism and resilience as first order constructs. First, compared to the remaining three facets, the malleability of self-efficacy is more salient with the widely recognised theory of Bandura (1997) which concludes that self-efficacy not only possesses the critical characteristic of being developable but it also has transferability power from one domain to another based on the general self-concept of the individual. Through vicarious learning, self-efficacious individuals engage in continuous new learning experiences by projecting their original confident self-conception and become capable of further developing their self-efficacy. Second, hope is believed to be moulded by the situational characteristics and cues and consequently possess a malleable property (Snyder et al., 1996). It is believed that while engaging in *"re-goaling"* cognitive exercises, individuals need a set of positive motivational beliefs and capacities that can be regulated and adapted in order to suit and actualise these goals (Snyder, 1995). Hence, hope is conceptualised and operationalised as a malleable cognitive and affective

motivational belief that is utilised to achieve desirable outcomes. Thirdly, with the work of Seligman on Learned Optimism (1998), one can infer that individuals who explain external situations in positive explanatory styles develop *"flexible optimism"* to appraise the outcome in a positive manner (Peterson, 2000; Schulman, 1999). Regarding the malleable characteristic of resilience, there is growing evidence suggesting that in the face of adversities, resilient behaviour can be developed and expanded. Similar to other sections of this study, I make cross-disciplinary referrals to support my argument on the malleability of resilience. In this regard, Masten and Reed (2002) have observed that resilience in the workplace can be cultivated through specific training and modelled strategies including risk-focused, process-focused and asset-focused methods. Although this conclusion was preliminarily drawn in organisational psychology, it sheds light on the potential malleable property of resilience to be expanded and enhanced in the student population as well.

Finally, due to its malleability, some studies have suggested including similar positive cognate constructs into the operationalisation process of PsyCap such as flow, wisdom and gratitude (Luthans et al., 2007); however, prior to embracing additional positive constructs, I believe and argue that it is conceptually and empirically plausible to continue reviewing and validating the current status of PsyCap with rigorous theoretical justification and evaluation of its psychometric properties prior to including additional positive motivational beliefs. For this purpose, the current study commenced with evaluating the psychometric properties of PsyCap (Hypothesis 1).

2.8 PsyCap in Organisational Behaviour

Until recently very few studies investigated the role and influence of PsyCap in learning and motivational settings. Instead, most of the scholarly work that targeted the conceptual and empirical nature of PsyCap and its impact revolved around organisational behaviour, workplace productivity and the way employees contribute to the growth of their environment (Bakker & Schaufeli, 2008; Larson & Luthans, 2006; Luthans, Avolio, Avey & Norman, 2007; Luthans, Avolio, Walumbwa & Li, 2005; Peterson et al., 2011).

Mostly observed in cross-sectional design studies, employees' psychological capital has been consistently and positively associated with their performance outcome as rated by their supervisors, individual mindfulness and positive emotions (Avey, Wernsing & Luthans, 2008), commitment to organisational missions and values (Luthans & Jensen, 2005), perception of safety climate among air controllers (Bergheim et al., 2013), authentic leadership (Jensen & Luthans, 2006), leaders' psychological capital with followers' performance (Walumbwa, Peterson, Avolio & Hartnell, 2010), reported innovation (Luthans, Youssef & Rawski, 2011) and sense of humor (Hughes, 2008). Moreover, individuals with high PsyCap reveal less occupational stress and turnover from work (Avey et al., 2009) and show lesser voluntary and involuntary absenteeism (Avey, Patera & West, 2006). Furthermore, when exploring the potential influence of not only individual positive psychological capital but also the collective psychological capital of group members, some researchers have observed a significant correlation between collective psychological capital and trust in group-level performance and citizenship behaviour (Walumbwa, Luthans, Avey & Oke, 2011). Except for a few studies, most of the scholarly studies that have explored the nature of PsyCap and its influence on organisational behaviour have focused on Western/American societies and participants and have not included other non-Western cultures except for Chinese (for example, Aryee & Chen, 2006) and Turkish cultures (Cetin, 2011). Although the original PsyCap scale is validated in different cultures, for example South Africa and Italy (Alessandri, Borgogni, Consiglio & Mitidieri, 2015; Görgens-Ekermans & Herbert, 2013), further research is still needed to explore the generalisability of PsyCap in different societies (such as Arab societies) to observe the influence of culture on an individual's PsyCap.

To summarise, since its inception nearly a decade ago, PsyCap as a positive resourceful belief has captured the intellectual and scientific attention of many scholars who have consistently found positive consequences on employee's productivity, motivation and performance.

2.9 Conclusion

In this chapter, I reviewed the role of positive psychology and PsyCap in a learning context and referred to the conceptualisation of the construct to support the potential robust transferability of PsyCap into a learning setting. The influence of individual subscale of PsyCap on achievement motivation was also discussed and critiqued. In addition to making a theoretical inference on the distinguished value of each subscale, the chapter concluded with reviewing the role of PsyCap in organisational behaviour. Consequently, Chapter 3 will review the way students perceive their learning as instrumental for future goals and specific references will be made to Expectancy-Value theory and Future-Time perspective of achievement motivation in addition to reviewing the literature on deep cognitive strategies and academic achievement.

Chapter 3

Perceived Instrumentality and Deep Cognitive Strategies

3.1 Perceived Instrumentality of Learning and Academic Achievement

3.1.1 Introduction

During my classroom observations, I often hear teachers addressing certain students by saying "you need to understand this topic well since you will definitely need it for next year". I assume that this simple but critical *linkage* of successfully executing present learning tasks for future gains is one of the effective pedagogical practices that aim to grip the attention of disengaged students. With the ultimate aim of motivating students to stay focused, successful teachers embed similar approaches to motivate students to master certain skills and acquire specific knowledge. For example, the way a student perceives a human anatomy course as instrumental for future gain might predict his/her engagement in the course and consequently achievement outcomes. Moreover, a student becomes motivated to master certain skills in an anatomy course not only for achieving immediate goals and succeeding in the course, but also due to the future expected goal of the course, for instance specialising in the field of medicine and becoming a medical doctor. In fact, a student might even forgo short-term goals with the ultimate aim of achieving more distant future goals. On the other hand, failing to find a link between performing a task and its future usage might seriously hamper a student's motivation to be engaged in performing and learning behaviour. As a result, the student becomes motivated to invest time, effort and persistence mostly in tasks that have incentive and instrumental value for distant future goals. The utilisation and investment in effort in turn positively impacts the academic attainment of the students (Dupeyrat and Martine, 2005).

If providing quality education ultimately aims to prepare motivated and self-regulated learners, then enduring understanding and learning are integral parts of meaningful education. This study does not aim to investigate the instructional and pedagogical

practices between constructive and didactic approaches that uncover meaningful learning. Even though teaching practices that are well informed by students' learning strategies can enrich meaningful learning experiences because of the intricate association between teaching and learning, Study 1 aimed to understand students' deep cognitive strategies and their association with respective motivational beliefs for meaningful learning that ultimately leads to successful learning outcomes. Therefore, Study 1 sheds light on the way students devise strategies and methods that enhance meaningful learning, develop deep rather than shallow strategies that challenge and elaborate the veracity of information and later integrate it into an existing system or body of knowledge.

After providing an in-depth review on the role of psychological capital in an educational setting including the extrapolation of its subscales, this chapter will explore the perceived instrumentality of learning in the Expectancy-Value theory of achievement motivation and its suggested positioning in the hypothesised learning model in addition to providing a review of deep cognitive strategies. The main focus of the chapter revolves around the way instrumentality of learning influences achievement outcomes via deep cognitive strategies and PsyCap.

3.1.2 Theoretical Review: How Various Achievement Motivation Theories Explain Performance Outcomes?

With the increasing interest in examining the nature of human motivation and intentionality, there is a proliferation in theorisations that capture the formulation of motivation for achievement. Motivation influences choice, persistence and performance and consequently students concretize their immediate and future goals through utilisation of cognitive strategies to achieve their learning objectives. Students' achievement motivational goals are taxonomised depending on the school of motivational thought that explicates its cognitive representation. Expectancy-Value theory, for example, which will guide the conceptual discourse of this study argues that students' achievement task, vigour and performance is a function of their ability beliefs, value of the activity and past

achievement outcomes (Eccles et al., 1983; Wigfield & Eccles, 2000). This theory suggests that self-belief (efficacy) and task-belief (perceived instrumentality of learning) are the underpinning determinants of students' cognitive strategies and consequently academic outcomes. In Self-Determination theory, researchers distinguish between intrinsically inherent motivations and extrinsically dependent rewards systems that operate in either direction with the aim of meeting the basic human needs of competency, autonomy and relatedness (Deci & Ryan, 2000, Ryan & Deci, 2012). In turn, Achievement Goal theory explains students' learning strategies by contending that students have specific goal orientations and beliefs that influence the way they engage and execute learning tasks. These goal beliefs are differentiated between mastery-goal oriented students where individuals are intrinsically interested in the process of learning and performance-goal oriented where students become concerned with competition and performance outcomes (Dweck, 1986; Pintrich, 2000; 2004; Pintrich & De Groot, 1990). Students in these two categories of motivational thoughts pose different and sometimes paradoxical questions between "What, how and why will I learn?" versus "How can I outperform others?". Furthermore, these two goal approaches are taxonomised between mastery-approach, mastery avoidance and performance approach and performance avoidance (Elliot & McGregor, 2001; Harackiewicz, Barron, Pintrich, Elliot & Thrash, 2002;). Students pursue learning goals behind executing learning tasks and these goals, whether mastery or performance, are the psychological antecedents of respective cognitive strategies and learning outcomes. Depending on the adoption of mastery versus performance goals, students engage in deep versus shallow cognitive strategies for task execution (Ames, 1992).

To summarise, the way students develop and cultivate their learning goals has direct implications on their respective cognitive strategies and consequently achievement outcomes. In the following sections I review major empirical and theoretical studies that have explored students' perception of the utility value or perceived instrumentality of their learning and the way this perception influences respective strategies and achievement outcomes. I contend that perceived instrumentality of learning predicts successful learning via deep cognitive strategies and psychological capital.

3.1.3 The Role of Perceived Instrumentality in Explaining Performance Outcomes

The learning strategies that students select, utilise and execute for understanding and knowledge acquisition depends on an array of factors including their goal orientation, classroom goal structure, competency beliefs and utility of their learning for future plans. One of the influential factors that shapes students' learning motivation is the extent to which they perceive the value of a learning task or the instrumentality of their learning valuable for achieving distant goals (Miller & Brickman, 2004). Although in the current research task value and perceived instrumentality will be conceptually undifferentiated, some studies have found that unlike perceived instrumentality which is a future oriented motivational variable, the task value of a learning activity has no time specific perspective (Husman, Derryberry, Crowson & Lomax, 2004). Perceived instrumentality as a motivational orientation signifying learning as useful for future gains is conceptually similar to Wigfield and Eccles's (2000) utility value, Markus and Nurius's (1986) possible future selves and Raynor's (1974) future orientation and hence it will be treated analogously.

Expectancy-Value theory, which was conceived by Atkinson (Atkinson, 1957) postulates that motivation to perform certain learning tasks is influenced by the individual's expectations for success and the *value attached* to the success. In other words task motivation is the product of task Expectancy and task Value. Wigfield (1994) further developed Atkinson's Expectancy-Value theory and observed that individual's values and outcome expectancies are associated with achievement goals, self-schemata and abilities related to the specific task at hand. Consequently, students construe meaning for their learning in relation with a future goal. According to the early theorists of the model "even if people are certain that they can do a task, they may not want to engage in it" (Eccles, Wigfield & Schiefele, 1998, p.1028). Thus, students' engagement and persistence in the learning process depends not only on their certainty for accomplishing the task successfully but also on how well they can relate the tasks to future learning goals (Eccles & Wigfield, 2002). Often students appraise a learning task as tedious and disengaging, yet due to its association with future goals their present learning behaviour,

exemplified through cognitive strategies and motivational beliefs, is often adjusted. Consequently, perception about the instrumentality of learning for future goals becomes a strong predictor of students' motivational beliefs and strategies that they use to achieve similar distant goals. For example, in one of the few studies in a high school context, Pieterse and Grobler (2005), in an unpublished thesis, examined the potential predictors of the graduating students' career maturity level measured through their career information, information about themselves in addition to career planning and decision-making. The researchers concluded that unlike those students who were present oriented, incorporating future goals in present learning experiences strongly predicted maturity and readiness for career. Most likely, a student's career goal to become a researcher, for example, is contingent on the successful execution of immediate tasks in statistics by utilising sophisticated cognitive strategies and enhanced positive beliefs such as enhanced self-efficacy, hope, optimism and resilience. These strategies and motivational beliefs in turn bring him/her closer to achieving the distant goal of becoming a researcher. Similar findings lend support for the notion of cultivating chronologically future oriented goals in school setups that motivate students to engage and persist in their achievement motivation. Moreover, according to the advocates of Expectancy-Value theory of achievement motivation, the subjective values that individuals hold are composed of four factors (Wigfield & Eccles, 2000):

a. *Attainment value* which connotes the importance of performing a current task
b. *Intrinsic value* which characterises the enjoyment drawn from performing a task, which in fact resembles the intrinsic motivation of self-determination theory (Deci & Ryan, 1985).
c. *Utility value* or the instrumentality of performing certain task in achieving distant future goals. Utility value unlike the other three components acts as a medium to serve distant rather than immediate goals.
d. *Cost* is the price of the effort invested in executing a task.

Eccles & Wigfield (1995) analysed the components of subjective values proposed by Eccles et al. (1983) and concluded theoretical and empirical differences in the nature of the four factors suggesting that each factor of the model explains an independent goal

belief that in turn influences students' learning choice of activities, persistence and subsequently performance. Accordingly, the utility value or perceived instrumentality of Expectancy-Value theory is operationalised as the "importance of the task for some future goal that might itself be somewhat unrelated to the process nature of the task at hand" (Eccles at al., 1983, pp.89-90).

Perceived instrumentality is positively associated with self-regulated learning (Miller, DeBacker & Greene, 1999; Miller, Greene, Montalvo, Ravindran & Nichols, 1996;), mastery goal orientation (DeBacker & Nelson, 1999), perceiving the classroom environment as meaningful for future goal achievement and academic achievement outcomes (Greene, Miller, Crowson, Duke & Akey, 2004). In fact, the notion of perceived instrumentality of future goal attainment has been conceptually differentiated similar to attainment value and utility value of Expectancy-Value theory. For example, Vansteenkiste, Simons, Soenens, & Lens (2004) argued for a conceptual differentiation between future extrinsic goals versus future intrinsic goals. Accordingly, extrinsic future goals are those goals that are controlled by external significant others or rewards systems such as monetary gains and high-profile careers whereas students with future intrinsic goals are inwardly compelled to find incentive and utilitarian value in academic tasks. In this regard, some studies have concluded that when students attribute their learning task to future extrinsic goals, deep conceptual learning is usually undermined whereas the positive association between future intrinsic motivation and conceptual understanding is mediated by autonomy and task involvement (Vansteenkiste, Simons, Lens, Soenens & Matos, 2005). However, Study 1 has merged both intrinsic and extrinsic future motivation into one lucid variable (perceived instrumentality) under the rationale that intrinsic versus extrinsic future goals conceptually carry the same underlying ascription of engaging in a behaviour for some future goal and reward. Since intrinsic versus extrinsic future goals fall in the same line of reasoning as Self-Determination theory, future instrumental learning is conceptualised and operationalised into perceived instrumentality.

In support of the argument raised in the literature, Greene, DeBacker, Ravindran & Krows (1999) have not observed conceptual differences between intrinsic value, utility value and attainment value due to the higher-level abstraction that characterises each factor separately. I assume that due to the potential *layering of motivational* thoughts in high school*,* students approaching learning tasks for future goals might also approach learning tasks with the intrinsic motivation of learning and achievement (Husman et al., 2004; Lens, 2001). Hence, various conceptual orientations of each dimension of intrinsic versus extrinsic future goals and the intrinsic and utility value of Expectancy-Value theory were collapsed into one variable, namely perceived instrumentality.

Expectancy-Value theory is developed from a Future-Time perspective (which will be explored in the following section) which describes the underpinning motivational process that explains the way students perceive a task as instrumental for future goals. The instrumental value of learning developed from the future time framework motivates students to *initiate* and *execute* cognitive strategies for achievement and performance. This implies that during self-regulated learning students at the forethought phase of goal setting identify and anticipate the long-lasting consequences of a current learning activity and consequently increase or decrease their effort and utilise deep or shallow cognitive approaches respectively in response to the future value of the learning task. I assume that, as presented in the hypothesised learning model of Study 1, the association between instrumentality of learning and successful outcomes is accounted for PsyCap since the way learning value is associated with positive outcome is explained by the self-efficacious thoughts and the likelihood of developing hopefulness and optimism. Hence the critical anticipated role of PsyCap, which potentiates the task persistence determination towards future goal achievement that is mediated by efficacious thought, hopeful thinking, optimism and resilient behaviour. Simons, Dewitte and Lens (2004) have raised similar remarks by suggesting that the relevancy, future time perspective and instrumentality of a learning task require motivation for persistence for goal attainment. Consequently, in Study 1 the inquiry that pertains to this conclusion is "*What are the motivational beliefs and psychological skills needed to achieve distant learning goals? Does PsyCap explain the influence of similar distant goals on achievement outcomes?*

Most likely when learning goals are perceived to be distant and instrumental, students conceive goal achieving strategies with an enhanced self-efficacy, hope, optimism and resilience in order to persist in the goal pursuit processes. For example, when students plan to enrol in advanced level courses in their university education (to pursue a post-graduate degree in the future, for instance) most likely they exert additional effort, increase engagement and persistence compared to students who undermine the importance of similar plans for some reason. Moreover, the chronological distance of such goals exposes them to certain difficulties and challenges that in turn demand resilient behaviour, optimistic and hopeful learning approaches for goal attainment. Previous studies have indicated that a sense of perceived instrumentality for a learning task positively influences the academic motivation and academic achievement for high school students who have a positive rather than a negative attitude towards the future (Van Calster, Lens & Nuttin, 1987). Although limited research investigations were carried out following the above-mentioned study to conceptually and empirically elucidate the role of positive psychological emotions and beliefs towards the future in explaining the impact of perceived instrumentality and enhancing motivation and academic achievement, the above study still has critical implications towards highlighting the role of positive versus negative outlook, hopefulness and optimism. Furthermore, Simons, Dewitte & Lens (2000) investigated the association between perceived instrumentality and goal orientation and concluded that perceiving a learning task as useful for future gains was associated with task-oriented internally motivated learning behaviour whereas tasks that did not demonstrate any established link for future goals encouraged a performance oriented approach for task execution. Similarly, due to their increased interest and engagement, students who perceived a learning task as instrumental for future goals have endorsed increased deep cognitive task strategies and lower shallow processing strategies (Simons et al., 2004). Most probably due to the framing of the future goal attainment as personally valued and its linkage for confirming self-schemata and preserving self-worth, students demonstrate more positive outlook and task persistence and meanwhile devise deeper cognitive strategies compared to goals that have less instrumental value for goal attainment. In summary, Study1 explored the influence of affective and psychological motivational beliefs in a holistic learning model

that in turn explained the influence of perceived instrumentality on achievement outcomes. Specifically, due to the fact that PsyCap is an amalgamation of positive psychological constructs that are both present and future oriented, I assumed it will account for the relationship between instrumentality and academic achievement.

3.1.4 Future Time Perspective and its Role in Learning and Achievement

Previous literature on achievement motivation mostly highlights the intentionality to achieve *immediate* goals that in turn drives learning, performance and goal attainment (Stock, & Cervone, 1990) and often sheds less emphasis on the plausible influence of future orientated goals in students' learning motivation (Husman & Lens, 1999). Perceived instrumental value of learning was developed within the context and literature on Future Time perspective (FTP). According to FTP, students who value learning tasks as instrumental become more engaged in task performance in order to achieve distant goals by *developing a time perspective* goal orientation that focuses on the distant future. In the literature, De Volder & Lens (1982) have differentiated between the cognitive and dispositional/motivational aspects of an individual's FTP. Dynamic FTP is defined as the disposition to assign high valence to certain goals whereas the cognitive aspect is presented as an anticipation of future goals. According to McInerney (2004), discussion on the conception of time perspective started with the work of the psychologist Jean Piaget on the sense of merging consciousness on past and future where the theorist has assumed that by following children's cognitive development one can:

> …anticipate that by the late concrete operations stage and into the formal operations stage most individuals have a reasonably well-developed sense of the future. This would coincide, in most cases, with children being in middle high school. It is an interesting point, therefore, to examine whether children in middle and high school do, in fact, articulate a sense of the future and whether the clarity of this articulation increases as they progress through school (McInerney, 2004, p.142).

Similarly, Wigfield, (1994) in his motivational theory observed that children do not find a complete meaning of learning experience in school until after middle school. Consequently, students during this stage develop a sense of instrumentality for their learning and schooling. Hence, it becomes theoretically plausible to examine the perceived instrumentality in a high school context and explore its potential influence on performance outcomes via PsyCap and deep cognitive strategies.

Students who are motivated to achieve distant future goals and have longer time perspectives are more persistent in task engagement (Lens, Simons & Dewitte, 2001), develop and use deeper cognitive strategies for learning and comprehension (Hortsmanshof & Zimitat, 2007), display an increased effort and satisfaction in performing tasks and embed their sense of future time perspective into their self-regulatory learning activities (Miller & Brickman, 2004), develop adaptive self-regulated learning (de Bilde, Vansteenkiste & Lens, 2011), report higher academic achievement measured through GPA (Zimbardo & Boyd, 1999) and also conceive better time management strategies compared to those students who have less extended FTP (Harber, Zimbardo & Boyd, 2003). Thus, evidence suggests that students who envision an intentionality to achieve future goals report successful learning.

3.1.5 Perceived Instrumentality of Learning as Predictor of PsyCap

Motivational theorists aim to explain the underpinning reasons of "why" and "how" motivation influences students' learning choices, persistence and attainment. The instrumentality of learning which often captures the "why" of learning is defined by the acquired value of a learning task for the attainment of future learning goals. These values that students attribute to their learning emerge from society's norms (Vazquez & Rapetti, 2006) and their individual psychological needs that confirm (or disconfirm) individuals' self-schema. Students throughout socialisation and enculturation interpret goals related to learning and schooling that act as an essential part of their social responsibilities (Walker, Pressick-Kilborn, Arnold & Sainsbury, 2004). Most likely, students internalise goal development structures and systems through absorbing values that are conveyed via

school policies, expectations and teachers' pedagogies and practices. By having in mind the contextual specificity of the current research in addition to the essential goal of enrolling in higher education, exploring the perceived instrumental value of learning in high school students and the way it is associated with PsyCap emerges as an integral part of the stipulated positive learning model.

Advocates of Expectancy-Value theory argue that the way motivation directs students' choices and attainment is driven by their ability beliefs and instrumental/achievement value of the learning activities (Wigfield & Eccles, 2000). In Expectancy-Value theory, the learning goals that students embrace are *broad in scope and direction*, which contradicts the specificity of learning goals in Achievement Theory. For example, De Backer and Nelson (1999) argue "Expectancy-Value models include individual goals, but these are conceptualised in a way that makes them quite different from the context-specific achievement-related goals that are at the heart of Goal Theory" (p.72). In fact, differences in the scope of measurement were also highlighted by Bandura (1997) where he argued that efficacy should be captured at task-specific domain level. For example, Achievement-Goal orientation for mastery and performance might explain the predictive power of self-efficacy on task specific execution on specific math problem-solving skills. On the other hand, in Expectancy-Value theory, although a student might lack the confidence to solve a specific math problem, he/she might still have the general confidence, hopefulness and academic optimism to perform and achieve in math coursework due to the instrumental value of the course for future outcomes. Hence, as was initially conceived by the early theorists of the Expectancy-Value model, achievement and learning goals are seen to capture the broad and distant goals that impact achievement behaviours indirectly through values and expectancies. This *general and broad scope* of achievement goals is one of the critical reasons for synthesising the variable within the postulated model. In the same line of argument, the achievement performance that was measured in Study 1 is the general cumulative performance of the students rather than their subject specific achievement outcomes.

Secondly, instrumental and achievement value of learning theory informs the chronological position of students' learning goals that ranges between current and future oriented goals. For example, the Achievement-Goal motivational model concentrates on the students' proximal and immediate goals to understand their motivation to learn and execute tasks; however, within this theoretical paradigm students' future-oriented distant goals that often regulate their learning processes are overshadowed (Husman & Lens, 1999). In Expectancy-Value theory within Future Time perspective, students' future oriented thoughts are accentuated and conceptualised as a key component to understand their learning motivation. For example, although some students show keen interest in engaging with meaningful learning, others see learning as a tool for grade promotion, achieving future-related plans including graduation from university and entering the job market with a college education. Students convert and concretise motivational goals and behavioural plans to achieve similar future ends. Hence, students' motivational goals can be positioned on two continuous but different dimensions: *immediate versus future goals* (Miller & Brickman, 1997). As such, students with distant future goals have a perception of time perspective that is not only future oriented and takes into account the future consequences of current learning behaviours (Lens, Paixao, Herrera & Grobler, 2012) but also predicts deeper and more meaningful learning engagement and academic achievement (Horstmanshof & Zimitat, 2007; Brown & Jones, 2004). Thus, students' PsyCap and deep cognitive strategies explain the influence of distant achievement goals on performance outcomes.

In sum, I argue that a sense of learning purpose for the future embodied in finding applicability and usefulness in academic work directs students for effective use of strategies, display persistence and hopeful cognition in school. The rationale of outlining a positive and holistic model of learning founded on motivational, cognitive and affective considerations is the assumption that evaluating learning as valuable for the future by itself does not ensure goal attainment behaviour. Instead the positive effect of instrumentality of learning on successful learning is explained by the students' deep cognitive strategies and PsyCap.

3.1.6 Conclusion

Futuristic thinking is a source of motivation. Schooling by definition is a future oriented learning experience where students study to graduate yet certainly not all students appraise the "futureness" of learning as valuable. Hence, future time shapes students' motivation. Willingness to learn in senior schools can be often driven by the internal will for knowledge acquisition and intrinsic motivation, but also the utility value of education influences students' motivation to master certain sets of skills for the ultimate aim of future gains. Succeeding in linking classroom tasks, knowledge and instruction to future usage in a significant and meaningful way adds incentive value to students' learning experience. Future time perspective is often used as a motivational context within which students' future learning goals, cognitive engagement and information processing is understood. I contend that it is the representation of the students' distant goals accounted by PsyCap and deep cognitive strategies that guides and regulates their learning outcomes.

3.2 Deep Cognitive Strategies and Academic Achievement

3.2.1 Empirical Review

One of the most defined and examined constructs in the field of learning behaviour is students' utilised strategy to obtain, process and acquire knowledge (Dresel and Haugwitz, 2005). Multiple studies provide evidence on the positive learning outcomes influenced by the association between learning strategies and motivational orientation of students (Pintrich & Schunk, 2002). However, the specific processes involved in this association in addition to the contribution of students' motivational beliefs and emotions require further scientific enquiry. To understand the learning processes and outcomes, research on cognitive strategies has focused on answering the question "how". For example, how do students elaborate, organise and form knowledge? Motivational theorists, in turn, try to explain the "why" of understanding the underlying implicit forces that are activated in the light of the cognitive strategy used.

The literature has examined students' utilised cognitive approaches and strategies in a rather de-contextualised method with giving less attention to the learning context where students develop their deep versus surface cognitive strategies. Deep cognitive strategies are mostly associated with students' ability to develop enduring understanding and surface cognitive strategies are related with memorisation and recalling of information. In this regard, there is an ongoing debate and discussion on the distinction between surface and deep cognitive strategies and the direction of their relationship with the level of students' understanding and subsequent achievement level. As a result, it has become conceptually and empirically imperative to consider students' learning context in order to suggest the study approach that is more likely to yield a positive learning outcome. As a result, a third wave of learning strategies was suggested that considers students' strategic or achieving strategy in the learning environment to conclude the respective integrated strategy that students adopt (Biggs, 1987, Tait & Entwistle, 1996).

Strategic learning is conceptualised as a pattern of conceived and utilised strategies undertaken with respect to the specificity of the learning tasks. This conceptualisation is theoretically different from the previously studied cognitive strategies (surface and deep approaches) which assumed that students' learning strategies is predispositional, consistent and insensitive to situational cues similar to their individual or personal learning styles (For example, Schmeck, 1983). In this direction, Vermetten, Lodewijks & Vermunt (1999) concluded that students develop and utilise learning strategies that are both consistent and habitual and also are bound and susceptible to the learning context of the learning tasks and activities. Most likely, students who are capable to regulate their learning processes revise relevant strategies evoked by the nature of the learning tasks and undertake deep cognitive processing to ensure an enhanced understanding but also use surface strategies such as memorization to achieve positive outcomes from the study material. In this regard, a student who adopts a dynamic and strategic achieving learning approach that considers the situational cue of the learning task is more likely to direct and revise the relevant strategy either deep, surface or integrated in order to execute a learning goal and yield positive outcomes.

Moreover, the literature also examines deep versus surface strategies independently. In this regard, one of the empirical conclusions in the field of learning behaviour is the significant and well-established positive association between deep learning strategies and academic achievement on the one hand and shallow/ineffective self-regulated learning and academic underachievement on the other hand (Schunk & Zimmerman, 1998; Zimmerman & Schunk, 2012). With student centred learning emerging as a progressive methodology in teaching and learning practices, the learning strategies that students adopt between surface versus deep cognitive learning strategies become integral to successful learning (Biggs, 2011). In an approach that is superior to shallow and surface processing, students who engage in deep cognitive strategies organise, elaborate, differentiate and relate relevant from unimportant information into existing schemata. They link acquired knowledge into conceptual frameworks, transform the acquired information into meaningful and durable knowledge and finally monitor their learning process (Riding & Rayner, 2013). Similar to students who utilise deep cognitive strategies, successful students are considered to be self-regulated learners who are metacognitively, motivationally and behaviourally active participants in their own learning process (Zimmerman, 1989). During the period of its first inception, self-regulated learning was defined as *metacognitive* knowledge and skill of self-referential appraisal method of learning approach that regulates an individual's own cognition and learning. However, afterwards, Zimmerman (1995) in pioneering work explained that the cognitive dimension of successful self-regulated learning is closely and holistically interlocked with the behavioural and motivational dimension of the students' academic functioning.

3.2.2 Conclusion

The above section reviewed the empirical studies that pertain to the way students approach their learning by integrating new ideas and information into existing units of knowledge. The utilisation of deep learning strategies has corresponding successful learning outcomes such as higher academic achievement (Ruban & Reis, 2006). In their quest to conclude with a unified account on why and how learners succeed or fail, Winne

& Nesbit (2010), proposed that two psychological phenomena account for students' effective learning: "the way things are" which is outside of their control versus "the way learners make things" on which they exert personal agency. Given this account, the present thesis adopts the latter approach as a guiding approach that can be prescribed to enhance students' learning. I believe that exploring malleable rather than inherent factors facilitates this viewpoint.

3.3 Academic Achievement

Since achievement is examined as the outcome variable in Study 1, in this section I review empirical studies that have examined the influence of perceived instrumentality, deep cognitive strategies and PsyCap in predicting successful learning. Due to its plausible value in teaching and learning, students' academic performance and achievement has often been measured as an important outcome criterion in the theoretical and practical significance of educational research. While there is no clear and consistent method for the measurement and operationalisation that captures students' academic achievement, for the purpose of the current study I have operationalised achievement level of participants as the end-year overall grades which is the summation of cumulative grades and performances throughout the academic year.

Within the specific theoretical framework of Study 1, many research findings have highlighted the direct predictors of students' positive academic achievement such as deep learning strategies (e.g. Fenollar, Roman & Cuestas, 2007). In another study, compared to students who attended traditional lecturing classes, those participants involved in active and meaningful learning reported higher academic progress (Freeman et al., 2014). In terms of the positive indirect association between perceived instrumentality of learning and academic achievement, there is a rigorous conclusion, which states that students' conception of the value of learning task yields academically successful outcomes via many mediums and processes. For example, Simons, Dewitte & Lens (2004) examined the role of instrumentality in predicting academic performance and concluded that those students who attribute certain utility value for the courses were

more likely to engage in more adaptive learning activities and developed more efficient learning habits, which led to more positive performance outcomes. Meanwhile, those participants who failed to establish a positive utility link, connectedness or valence with their learning tasks reported lower achievement. Also, the positive and *direct* influence of perceived instrumentality of a learning task is observed on academic achievement. For example, in one study, those high school students who valued their task and attributed certain valence for its execution reported higher achievement scores (Yumusak, Sungur & Cakiroglu, 2007). A similar conclusion is drawn by Shell and Husman (2001) where they found a positive correlation between instrumentality and grade point average. In fact, the focus in the current literature is mostly directed to examine performance as outcomes criteria within a model of learning and the way various variables pertain to explain success in academic learning. Instead of looking into the antecedents of learning outcome independently, I argue that a conceptual model that embeds cognitive, motivational and affective factors may better explain possible variance in attainment level (Phan, 2009).

Within the model that has been conceptualised in Study 1, I assume that PsyCap in its totality predicts academic achievement. Since enquiry about PsyCap within a learning context is still in its infancy, both theoretically and empirically, I have also reviewed the individual subscales and its impact on academic achievement. In this direction, there are voluminous, consistent and rigorous findings that support the positive predictive power of self-efficacy beliefs on achievement level (e.g. Alivernini & Lucidi, 2011) as well as its mediating mechanism to explain successful learning (Pajares & Miller, 1994). Similarly, many studies have concluded that positive hopeful cognition is positively related to achievement (Adelabu, 2008) while students with a low level of hope reported negative learning outcomes (Chang & DeSimone, 2001). Similar results were also reported more recently with the work of Day et al. (2010) and when hope was captured in different cultures (Levi, Einav, Ziv, Raskind & Margalit, 2014) since the role of family, friends and peers in collectivistic cultures might shape the individual's external loci-of-hope cognitions (Bernardo, 2010). Furthermore, hope predicts academic achievement above a student's previous academic achievement, intelligence and personality (Day et.

al, 2010). Previous studies have also indicated that academic achievement is positively predicted by optimism. For example, Hoy at al. (2006) concluded that optimism is positively correlated with the achievement level of the students even after controlling for demographic variables and previous achievement level. Finally, with the fourth subscale of PsyCap, previous research findings have provided preliminary support for the role of resilience in explaining students' achievement. For example, Hartley (2011) has observed that students who display resilient thoughts and behaviours outperform their colleagues who have less reported resilient behaviour.

In sum, over time and across many studies, there is a rigorous and consistent conclusion on the empirically strong influence of positive motivational beliefs on achievement outcomes in addition to the established predictive power of deep cognitive strategies on the quality of learning experience. In order to validate the individual variable's impact on performance, this research will first examine the distinctive influence of each variable on learning outcomes; likewise, I will explore the combined integrated influence of the proposed learning model on achievement.

3.4 Research Questions & Hypotheses of Study 1

The literature on achievement motivation provides considerable evidence on its association with positive learning outcomes. In this research, I aim to explore the role of PsyCap as an amalgamation of four positive motivational beliefs in a positive learning model that is assumed to be associated with cognitive strategies to influence outcomes.

By having in mind the broader purpose of the current study I aim to empirically investigate the role of achievement motivational beliefs and emotions, PsyCap, that cultivates learners' competency and psychological resourcefulness in the learning process. In the light of Future Time Perspective (Nurmi, 1991) and Expectancy-Value theory, I carried out the first part of Study 1 to investigate the role of students' PsyCap and the way it contributes towards their performance in a high school context. Again, due to the nature of my professional responsibilities, I have observed that some students display better readiness, persistence and motivation for higher education compared to

others and this readiness is usually associated with a set of positive beliefs that they exhibit during their learning routines. For example, during early years of high school I have come to learn that some students reason and conceive concrete educational plans for their university education and exhibit efficacious and hopeful thoughts in attaining these plans. Moreover, unlike those with less interest and engagement, some students stay motivated to persist in the face of challenges by actively developing problem-solving skills, reflecting on these experiences and constructing new approaches to enhance their learning journey. By having in mind these observations that pertain to the beliefs of students, this thesis aims to understand the underpinning motivational beliefs involved in determining positive learning experiences. Bearing in mind the background rationales, I aim to explore the empirical and conceptual landscape of the following questions:

1. On conceptual and empirical levels, how does high school students' PsyCap as a second order construct exist with four first order constructs: self-efficacy, hope, optimism and resilience.
2. Does perceived instrumentality of a learning task predict achievement level?
3. Does the PsyCap of high school students predict positive learning outcomes?
4. Do PsyCap and deep cognitive strategies correlate with each other?
5. Do PsyCap and deep cognitive strategies mediate the relationship between instrumentality and achievement?
6. How does the whole hypothesised positive learning model predict high school students' learning outcomes?

By having in mind these 6 questions, a time-lag research study was developed to capture the nature of 304 high school students' PsyCap, perceived instrumentality and deep cognitive strategies followed by reporting their achievement outcomes at the end of the year. More specifically, Study 1 aimed at investigating the conceptual and empirical validity of PsyCap as a second order construct in a high school context and examined the mediating role of PsyCap in predicting successful learning. Based on the theoretical structure of the postulated learning model, hypotheses 1-9 that pertain to students'

psychological capital and its relationship to deep cognitive learning strategies, perceived instrumentality of learning and academic achievement are specified as below:

H1. It is hypothesised that PsyCap is a second-order construct with four first-order variables, namely: self-efficacy, hope, optimism and resilience.

H2. It is hypothesised that perceived instrumentality of high school students positively predicts their PsyCap.

H3. It is hypothesised that PsyCap is positively associated with learners' deep cognitive strategies for learning.

H4. It is hypothesised that PsyCap positively predicts students' academic achievement.

H5. It is hypothesised that perceived instrumentality predicts students' deep cognitive learning strategies.

H6. It is hypothesised that perceived instrumentality positively predicts academic achievement.

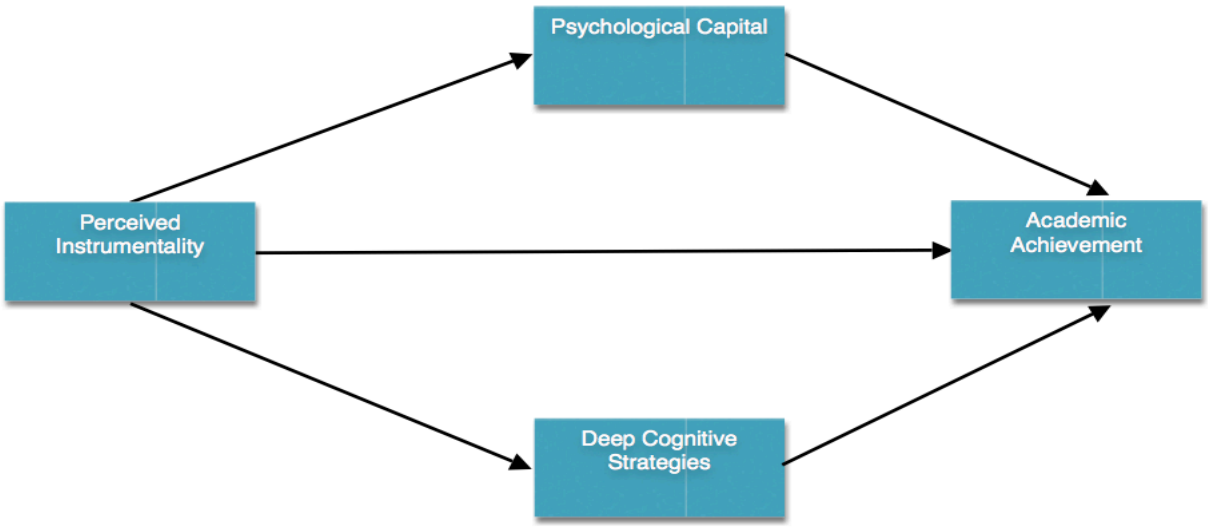
H7. It is hypothesised that deep cognitive strategies that students use positively predict academic achievement.

H8. It is hypothesised that PsyCap and deep cognitive learning strategies mediate the relationship between perceived instrumentality as independent variable and academic achievement as the outcomes variable.

H9. It is hypothesised that the postulated learning model (Figure 3.1) predicts students' learning outcomes.

Figure 3.1

Hypothesised Learning Model of Study 1



In order to test these hypotheses, I carried out multiple correlational, mediational, regression and path analyses. For this purpose, several data analysis techniques were used such as Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). The participants, design of Study 1, measurements, procedure, the analysis of the results and the discussion on the yielded outcomes are discussed below in Chapter 4.

Chapter 4

Study 1

The Mediating Role of PsyCap in predicting Achievement Outcomes

4.1 Introduction to Study 1

The principal thrust of Study 1 was to investigate the factorial structure of PsyCap and to examine the potential mediating role of PsyCap together with deep cognitive strategies in predicting performance outcomes in high school students. This chapter reviews the rationale of using a cross-sectional design and the method of the data collection. I discuss the participants, design, measures and the procedures of the time-lag research including the ethical considerations. Later, I expand on the data analysis techniques and highlight the importance of using CFA and SEM for construct validation and testing the plausibility of the hypothesised model and the specific association among its variables. The later part of the chapter discusses the emerging findings from Study 1 and introduces the experimental research of Study 2. A short interpretation is also provided in the light of the yielded results.

4.2 Context & Rationale: Quantitative and Positivist Method

The first part of the current dissertation was conducted by using a cross-sectional design. The strength of this design is to identify correlation or association between 2 or more variables with a relatively large sample of participants without assuming a causal relationship between or amongst these variables. Selecting a robust method for conducting research is an integral part of a scientific enquiry. This dissertation started with a pilot study followed by the two main research activities. The pilot study aimed to check the comprehensibility of the modified questionnaire that was used to capture students' PsyCap in Study 1 and academic hope in Study 2.

A potential research enquiry that adopts mixed methods between quantitative/positivism and qualitative/interpretivism to construct knowledge and meaning would appear ideal. I believe that *triangulation* is more likely to help enhance our understanding of the research variables and accordingly draw more robust inferences (Johnson & Onwuegbuzie, 2004; Mertens, 2014). However, due to the nature of the research questions in Study 1 (presented at the end of Chapter 3, section 3.4), I believe that selecting a quantitative method for data collection, as a robust, objective and systematic approach is integral to draw plausible interpretations from the collected data (Cohen, Manion & Morrison, 2007). Stemming from the account that knowledge can exist and be observed objectively, a researcher using a positivist method assumes the function of impartial observer who under controlled conditions utilises a scientific approach to test the viability of the tested hypotheses. Moreover, previous studies that have captured motivational beliefs in general and PsyCap more specifically have relied heavily on similar methods to explore the positive association of the variables with performance. Similarly, due to the merits of quantitative methods, the current study that revolves around emotions and motivational beliefs within positive educational psychology relies on questionnaires by utilising reliable instruments to inform the data as generalizable to the wider population. Moreover, unlike qualitative/interpretivist methods that observes participants' experiences, interpretations and perspectives, a positivist-quantitative approach as numerical and objective method promises plausible analysis of data to answer the postulated research questions that was correlational in nature.

In this direction, in Study 1, which was designed as time-lag research, empirical survey data was collected through previously validated questionnaires. As will be discussed further in details in section 4.4 on the design section, at the first stage the participants filled questionnaires related to PsyCap, perceived instrumentality and deep cognitive strategies. Later after around 5 months, they provided their academic achievement outcomes. Moreover, the primary reason for choosing a quantitative method is first to explore the *validity and generalisability* of PsyCap in school setups and with a high school population since no major empirical studies has been carried out to observe PsyCap in school contexts.

Thus, adopting a qualitative method could have limited the scientific exploration of the construct validation process. Since Study 1 aimed to observe the plausibility of positive motivational beliefs in a learning model, adopting a quantitative method promised more reliable interpretation of the collected data. In the next section, the participants of the pilot and Study 1 with instruments that were used to collect the data are explained and the internal reliability of each scale is reported.

4.3 Participants

The participants in the pilot and Study 1 (and Study 2) were high school students who attended international schools in the state of Qatar. As a country with a small population and booming economic and financial opportunities, the educational system in Qatar is streamed between public and private (mostly international) schools with one major public university and a chain of international satellite universities. The majority of the local school-age students attend public schools that are mostly funded by the Ministry of Education whereas children of expatriates in addition to many nationals are enrolled in international schools due to their high academic standards as well as the international teaching experiences of the teaching staff.

After high school graduation, the majority of graduating pupils from Qatari schools attend local or international universities. Most of the participants in the schools who took part in the study were international students in addition to a few local Qatari students. The local nationals receive full financial support from the Ministry of Education that enables them to be enrolled in higher education in Qatar and other respective countries such as the UK, USA, Canada and Europe. The Ministry usually covers the tuition fees and other expenses with the condition that the potential graduates serve in the public sector after graduation. Moreover, the Ministry advises students on a list of specialisations that the job market in Qatar is observed to be in need of and encourages students to make informed decisions accordingly. The children of expats mostly attend universities in their home countries with a minority attending the local satellite

universities that were established in the last 10 years as part of a bigger project to enhance the educational system in the state.

Advising and guiding the high school students on decisions related to university education, specialisation, admission examinations, financial support and country of residence is usually carried out by assigned guidance teachers and counsellors who are specifically trained to deliver similar services to students from grades 9-12. As part of application to university education, high school students in their last 2 years sit for university admission examinations. These exams include SAT or ACT (also TOEFL or IELTS). Such examinations are considered crucial for admission decisions and consequently students get prepared for them in the last 2 years of their high school.

Since many international schools are newly created, only those who have been well established were approached for surveying and data collection. In terms of the students' population and demographic makeup, I approached eight schools that had a mixture of local and international students. As a major requirement to take part in the pilot and Study 1 (and Study 2), I targeted schools and students that were expected to have acquired sufficient level of English language comprehension that would enable them to understand the instructions and provide reliable answers. The criterion for this judgment was the international curriculum of these schools such as International Baccalaureate, American High School Diploma or AS/A levels. Thus, the study covered schools that have officially adopted the English language as a medium of instruction.

In the pilot study, the total number of the participants was 45 students with ages ranging between 14 and 17 years from grades 10 & 12. Unlike the 2 main studies, participants in the pilot study provided their very recent grades in parallel to filling in the three questionnaires. In Study 1 the participants were also comprised of high school students *(N*=304*)* who were enrolled in grades 10, 11 and 12 at the time of the first cycle of the project. At the time of data collection, the age of the participants ranged between 14 and 20 years (M = 16.74, SD = .92, 50.3% female). The age and grade of the participants in the pilot and Study 1 are presented in Table 4.1.

Table 4.1

Demographics of the Participants in the Pilot and Study 1

	N	Minimum	Maximum	Mean	Std. Deviation
Pilot Study	45				
Age		14	17	15.07	.580
Grade		10	12	10.18	.576
Study 1	304				
Age		14	20	16.74	.92
Grade		10	12	11.55	.658

In Study 1, students' selection of specific courses or streams of studies (e.g. scientific or language arts) were not considered. Instead, all the students from mentioned grades were approached for voluntary participation. Finally, in order to avoid any personal influence resulting from lack of impartiality that might in turn create insider bias, I excluded my working school as part of this project and consequently I introduced myself as a solely external researcher.

4.4 Design of Study 1

As a cross-sectional study, Study 1 was designed with the aim of understanding the role and influence of high school students' PsyCap in a motivational and learning context. A random sample of students from eight schools participated in the pilot and main studies. Participants in the pilot and Study 1 filled in three different questionnaires that measured their PsyCap, perceived instrumentality and deep cognitive strategies (Appendixes E, F & G). After five months, they also provided their academic achievement that was positioned as the outcome variable in the postulated learning model.

At the piloting stage, all the participants filled in questionnaires that started with demographic questions related to age, gender and grade level. As the purpose of running the pilot study was limited to checking the comprehensibility of the questions on each

instrument, this stage of the study included only 45 high school students from two schools that were selected based on availability rather than random selection. First all the participants filled in the three questionnaires. Later I carried out focus group discussions in order to check and understand the comprehensibility of the items specifically for the PsyCap questionnaire, since no major study had examined PsyCap in high schools. Accordingly, I drew initial conceptual and empirical conclusions yet no major modifications on the instruments were introduced (the outcome of the pilot study and the focus group discussions are outlined in the section 4.9). For example, by having in mind that most of the participants were students who had English as a second language, the terminology and definitions used were checked, such as item 16 of the PsyCap scale which stated: "I usually take stressful things at school *in stride*" which was used in the original scale. Against expectations, the students through these open discussions displayed complete understanding of the term "in stride". Based on the positive outcome of the pilot study, the main research was designed and carried out.

Unlike the pilot, Study 1 was designed in a way that allowed for manipulating the time interval between measuring psychological capital, perceived instrumentality and deep cognitive strategies on one hand and achievement level on the other. By manipulating the period between collecting the data at 2 different time points, it was concluded that, to a certain degree of confidence, PsyCap as the independent variable influences achievement outcome although the partial or complete influence of a confound variable(s) was still not precluded (Goodwin, 2009). In order to conclude causality, the below 3 criteria should be first met (De Vaus, 2001):

A. The independent and dependent variables should co-vary by non-zero correlation coefficient.
B. The proposed cause must precede the dependent variable
C. The proposed relationship between the independent and dependent variables should not be attributable to another known or unknown variable(s)

Hence, if all these 3 criteria are fulfilled, a causal relationship between the independent and dependent variables is assumed. With regards to Study 1, despite the fact that

academic achievement as dependent variable was measured after 5 months from the time of collecting the independent and mediating variables, which fulfils criteria B, yet the proposed relationship between the independent variables and the dependent variable might be accounted for another variable. In sum, unlike Study 2 which was an experimental study and concludes strong causality, Study 1 was designed to infer prediction because of the time-lag design which in turn determines the strength and direction of the relationship between the independent and the dependent variables.

4.5 Measures

Adopting a quantitative research method might limit the gathering of in-depth and rich information on the research variables, yet it has a fundamental empirical benefit of not only reaching out to a wider number of participants but also relying on previously validated instruments for collecting data. In order to assemble structured information, using valid and reliable questionnaires is considered one of the basic techniques utilised to examine individuals' behaviours, thoughts and opinions (Coolican, 2004). The instruments that were used to assess the various variables of the postulated model are outlined in the below subsections (4.5.1 - 4.5.4) with their respective reliability estimates. With regards to measuring students' academic achievement, the method used to determine the participants' performance level is also explained.

4.5.1 Psychological Capital

The construct of PsyCap was first coined and validated by Luthans et al. (2007) as a multidimensional construct comprised of self-efficacy, hope, optimism and resilience. In this research, the instrument used to measure the PsyCap of the students in the two studies is the modified scale that was previously designed and validated by Luthans, Avolio, Avey and Norman (2007), which is a 24-item inventory. In the original study, Confirmatory Factor Analysis was conducted to evaluate multivariate normality present in the collected data and concluded a robust model with 4-factor structure with six items for each sub-facet, hope, self-efficacy, optimism and resilience, which fit all together and

form PsyCap as a higher order construct. However, the mentioned construct validation process was carried out with Management students at university level in Midwest United States (average age 22.5 years old) and employees from a technology company (average age 33.79 years old). Also, while coining the construct, an empirical examination to discern its convergent, discriminant and criterion validity was carried out against trait-like measures: core-evaluations, conscientiousness and extraversion. In this process, PsyCap was observed as having a strong correlation with the three variables and had a predicting unique variance on job satisfaction beyond the remaining constructs. In other words, the regression model with the three variables (excluding PsyCap) was significant yet once introduced, PsyCap predicted a unique variance.

For the purpose of Study 1 and after conducting the pilot study to tap students' understanding of the instruments, the language and wording of some items was slightly modified in order to accommodate the learning and motivational circumstances of high school students. For example, the original instrument included items such as "I feel confident in representing my work area in meetings with management" that pertained to organisational behaviour whereas in the modified scale the items were adapted to tap into the learning behaviour of the participants and changed into "I feel confident contributing to discussions in class". The modified scale is presented in Appendix E. The participants rated the questionnaire items on a Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). With regards to the inter-item reliability, I have adopted a value of 0.70 as acceptable indicator of internal consistency (DeVellis, 2016) for the used instruments in the study. For the internal consistency of the PsyCap scale, the Cronbach's alpha reported in the pilot study was $\alpha = .87$ (24 items) and α of 0.86 in Study 1, which indicates good to high reliability.

4.5.2 Perceived Instrumentality

The instrument used to tap the perceived instrumentality or utility value of a learning task was adopted from Greene et al.'s (2004) study, which was originally developed as part of the Approaches to Learning instrument previously validated by Miller (1996). The

Cronbach α reliability coefficient for the perceived instrumentality scale in Greene's study was computed at 0.90, which indicates high internal consistency. The scale is comprised of five items that measure the future motivation of the students and the way they perceive a learning activity as instrumental for achieving future goals (Appendix F). The participants rated the questionnaire items on a Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5) with an internal reliability of Cronbach α = .79 (five items) in the pilot study and 0.75 in Study 1, which also indicated acceptable reliability.

Unlike PsyCap as a newly emerging variable in high school and education, the instrument used to capture students perceived instrumental value of learning has a longer history in the literature of motivation and educational psychology. However, many research studies have used modified scales to capture the instrumentality of learning against specific learning goals that was first used back in the 1960s (Constantinople, 1967). For example, Husman et al. (2004) have adjusted the instrument of instrumentality adopted from studies by Van Calster, Lens & Nuttin (1987) and Turner & Schallert (2001) and related it to human development course as a unique context of their study. For the purpose of this study, students' perception of the utility value was related to their general learning and school experiences rather than a specific subject area.

4.5.3 Deep Cognitive Strategy

The envisaged strategies for learning are conceptualised as the use of cognitive learning strategies and methods that students utilise to choose, acquire and integrate information into a previously existing knowledge system (Pintrich & Scharauben, 1992). Previously, these strategies have been classified into the ways students develop and exercise rehearsal, elaboration and organisation (Warr & Downing, 2000) in addition to application, analysis, summarisation, memorisation and explanation (Vermunt & Vermetten, 2004).

In Study 1, the deep cognitive strategy scale designed by Greene et al. (2004) was adopted with minor modifications. The scale is comprised of 12 items and the participants rated the questionnaire items on a Likert scale ranging from *strongly*

disagree (1) to *strongly agree* (5) with Cronbach α reliability coefficient of α = .45 (12 items) in the pilot study[1] and 0.83 in Study 1, which also indicates relatively strong internal consistency (Appendix G).

4.5.4 Academic Achievement

In Study 1, the academic achievement of the participants as the outcome variable was reported and analysed five months after the initial collection of the data. The achievement outcome was operationalised as the students' overall performance on all the subjects that they were enrolled in including languages, mathematics, physics, chemistry, biology, humanities, design and individually elected selective courses. It was measured based on the end of year results computed according to the first and second term performances which in turn were an accumulation of the tests, examinations and various kinds of summative assessments.

The provided achievement levels of the participants were first averaged and standardised to a percentage system. Some schools provided students' end of year achievement levels in percentages. This set of data was analysed in absolute values without making any changes. Other schools provided students' achievement in different values for example IB grading system (1-7 scores) and American grading system (F - A^{+}). Despite their grading systems, all the 8 schools graded students' performance with a clear description for every achievement level. At the time of sharing this data at the end of the academic year, specific grade descriptors were attached to the students' report cards.

In order to develop a unified analysis method for these various grading systems, I utilised a common university admission equivalency conversion table that was based on the description for each scale of students' achievements. For instance, one of the schools (IB school) assigned the below description for students who achieved a 7 on 1-7 scale:

[1] The reason of reporting a low internal consistency in the pilot study but not in Study 1 is most likely attributed to the relatively small sample size of the participants (N=45). Some studies assume that an alpha only less than .40 should not be acceptable (Yurdugul (2008), thus in the pilot the alpha was above this cut-off point (.45).

> The student consistently and thoroughly understands and demonstrates knowledge and understanding of the subject area. The student shows highest ability to apply almost faultlessly the acquired skills and knowledge in a wide variety of situations. There is consistent evidence of analysis, synthesis and evaluation where appropriate.

The utilised admission conversion table indicated that a 7 on IB system corresponds to 91-100 (mean score of 96) on a percentage system. This conversion is based on the fact that the descriptor for a 7 in IB school corresponds to a similar descriptor on a 91-100 grade in a percentage system. In sum, all the non-percentage grading systems were standardised by utilizing the conversion table and the data for achievement was analysed accordingly.

4.6 Procedures for Study 1

After initial assessment of the pilot study, which discussed the research topic and the instruments, minor changes to the wording of the questionnaires were introduced. Moreover, although my current working school was not included in either the pilot or the main studies, my professional knowledge and experience helped me to gain, modify and later consolidate the theoretical structure of this research project. My *situatedness* in the high school context for 10 years provided unique perspective as "semi-insider researcher" to understand the motivational dynamism and the specific beliefs that students hold towards their learning experiences.

The data collection process, in both the pilot and Study 1, was preceded by receiving written permission and consent from the Durham University research ethics committee. Afterwards, I approached the administration of the eight schools as a doctoral researcher and submitted the letter that indicated the general purpose of the study and consequently received the approval of the principals to carry out the survey. Later, a separate letter was sent to the parents to explain the aim of the research and grant them the right not to take part in the study. To the best knowledge of the researcher, no parent indicated reluctance

or objection to participate in the study. Later on, during the surveying stage, I met with the participants in their respective classes and explicitly reiterated and explained their rights in taking part in the research.

The data collection process was divided into four cycles: introduction of the purpose of the research, filling the surveys, feedback on the surveying exercise and collection of the achievement level. Once the purpose of the dissertation was explained, the survey commenced with demographic questions: age, gender and class level. Then, the students filled in the respective three questionnaires. The total period required to finish the task was around 20 minutes for every class. Later after 5 months, the achievement levels were provided based on the classroom number of the students where most of the individual participant's name remained unrevealed to the researcher. The students' questionnaires were numbered with their respective codes that facilitated the last stage of Study 1 which is reporting of their cumulative achievement levels. Although the procedure of the study did not request the names of the participants, many students provided their first name on the questionnaire. These names were kept anonymous and were not revealed to any party.

4.7 Ethical Considerations and Limitations

Before collecting the data, similar procedures for both studies were followed prior to the surveying. The students were encouraged to provide honest and transparent answers since there were neither right nor wrong answers on any of the items. Presumably, this clarification reduced any type of evaluation apprehension. Then the participants were assured that all the provided answers and opinions would be treated with full anonymity and confidentiality. During these meetings, I also affirmed that the name of the school and the participant will not be requested nor published. Consequently, the participants' anonymity was respected during stage 1 and during the period of providing their achievement levels where I matched the number on students' surveys with their classroom lists. In addition, all the documents were kept in a locked safe. In sum, no

major ethical considerations were revealed in Study 1 since the students' voluntary participation, anonymity and confidentially were respected.

With regards to the limitations of Study 1, in an educational research, a quantitative method helps advance the understanding of various social realities and phenomenon under scrutiny in an empirically robust way. Similarly, in Study 1, using cross-sectional design helped in gaining insight into the role of students' academic PsyCap together with deep cognitive strategies in predicting achievement outcomes. Meanwhile, a positivist approach by *quantifying* reality also undermines an integral part of the reality construction process. For one fundamental reason reality does not only exist and exhibit itself subjectively in one way but also in its multiplicity through many ways. In this regard, the current research only captured one manifestation of PsyCap through direct questions; yet on the other spectrum, students' motivational beliefs can also be examined through collecting data through other designs such as case studies and interviews. Moreover, due to the nature of some of these subscales, such as resilience, case studies that evaluate students' peculiar past experiences and approaches adopted to overcome these challenges could potentially enrich our understanding of resilience as a motivational belief.

4.8 Analysis of Data

By having in mind the stipulated six research questions and the nine hypotheses, multiple data analyses techniques were used with the aim of drawing meaningful interpretations from the raw data. Most of the data analysis was carried out with the help of specialised software programs such as AMOS, which assists in Structural Equation Modeling and Confirmatory Factor Analysis. As for the usual descriptive statistical interpretations, I used Microsoft Excel and SPSS.

PsyCap is conceptualised as a second-order positive resourcefulness construct and mostly examined in organisational behaviour and psychology (Luthans, Avolio, Avey & Norman, 2007). The construct is rarely investigated in an academic context let alone in a

high school environment. Since the structure of the construct has previously been addressed and plausible empirical conclusions have been drawn, I commenced by conducting CFA rather than Exploratory Factor Analysis (EFA) since CFA is a theory and construct testing model as compared to EFA which is mostly utilised to generate constructs and theories (Schmitt, 2011). As a useful application for measurement equivalence across different demographics in addition to its usage for construct validation, there is a noticeable increase in the use of CFA that aims to investigate hypothesised relationships between observed variables and latent constructs (Brown, 2006). PsyCap as a compound variable is composed of first-order latent variables namely self-efficacy, hope, optimism and resilience that are substantially correlated with each other. In turn, the higher order construct, PsyCap, accounts for the relationship among these four variables. This constitutes the basis of the first research question and H1 (Chapter 3, Section 3.4).

I started by testing the hypothesis about the specific measurement and internal consistency of PsyCap as a second-order construct for many reasons. First, CFA as a multivariate statistical procedure assumes that the a priori model is supported by a specific knowledge theory with four latent variables and their corresponding items which load on specific factors. However, due to its validation in organisational psychology and potential anticipated differences in the two demographics (employees vs. students), I aimed to rule out measurement variance that might have been caused by demographics (Stark, Chernyshenko & Drasgow, 2004).

Therefore, I first analysed the equivalence of the measurement matrix across two different groups for the PsyCap scale: low versus high achievement students. This procedure was not stipulated as a distinct hypothesis. Instead the purpose of this analysis was to observe whether the properties of the model including the factor loadings and the item intercepts were invariant across low and high achieving groups and thus conclude the invariance of the latent constructs (self-efficacy, hope, optimism and resilience). Multiple Group Confirmatory Factor Analysis (MGCFA) was performed by using AMOS software in order to investigate the degree of measurement invariance across

groups and examine whether path coefficients in the identified model were equal for both groups and to observe whether the items function similarly in subgroups of the overall sample of 304 participants (Chen, 2008).

In the following section I report the results for the equivalence of the measurement matrix across two different groups: low versus high achievement students.

4.8.1 Measurement Invariance

The purpose of this analysis was to observe whether the properties of the construct including the factor loadings and the item intercepts are invariant across low and high achieving groups and thus conclude the invariance of the latent constructs (self-efficacy, hope, optimism and resilience). Multiple Group Confirmatory Factor Analysis (MGCFA) was performed using AMOS in order to investigate the degree of measurement invariance across the two groups (Chen, 2008).

In order to test measurement invariance between low versus high achieving students, I categorised participants with a grade of 70% and below as low achievers whereas those participants with 85% and higher were grouped within the high achieving group. The participants who fell between these two cut-off points were excluded from the measurement invariance analysis. Also, since the research had a relatively acceptable overall sample size of 304 participants, 177 were included in this analysis with students with 72 participants in the low achieving group versus 105 participants in high achieving group, which allowed testing two different sample groups across the same structural equation model (Bollen, 1989). Theoretically, measurement invariance (equivalence of measurement) across different groups implies that subjects with similar levels of the latent construct have identical expected raw scores on the measure (Drasgow & Kanfer, 1985) and that different groups ascribe the same meaning to the scale items (Gouveia, Milfont, Da Fonseca & de Miranda Coelho, 2009). Also, in measurement invariance testing between groups the measurement model becomes sensitive to group size. For example, the Likelihood-ratio (LR) test mostly known as the chi-square difference test is influenced by sample size of the participants (Bollen, 1989). In turn, Chen (2007) tested

the goodness of fit indices including CFI (Comparative Fit Index), RMSEA (Root Mean Square Error of Approximation), and Standardised Root Mean Squared Residual (SRMR) and Gamma hat and MC in two major studies. The researcher suggested that when sample sizes are unequal, the cut off criteria for testing loading invariance is a change of $< -.005$ in CFI supplemented by a change of $\geq .010$ in RMSEA or a change of $\geq .025$ in SRMR which would indicate *non-invariance of measurement*.

For this purpose, I conducted a simultaneous MGCFA between the unconstrained factor loadings and later by constraining factor loadings to be equivalent across the groups, I observed changes in the fit indices. Based on Chen's (2007) criteria, I computed the difference in chi-square for the restrained and unrestrained paths in order to cross validate the fact that the factor structure and factor loadings are sufficiently equivalent across groups. The outcomes of this analysis are reported in Table 4.2.

Table 4.2

Indices for Measurement Invariance

Indices	Unconstrained	Constrained	Δ	P Value
X^2	436.69	458.29	15.61	.30
df	292	311	19	
CFI	0.856	0.852	0.003	
RMSEA	0.053	0.052	0.01	

The chi-square difference test was significant and the other fit indices indicated measurement invariance between high versus low achieving groups. The yielded results indicated that CFI = .003 (which is greater than the suggested CFI = -.005) and RMSEA = .001 (which is lower than the suggested RMSEA of .01). Hence, the results suggested measurement equivalence between the two groups (low versus high achieving students), which in turn implies that the same construct is in fact measured across the participants. In summary, high and low achieving students in the study interpreted the modified

PsyCap scale in a conceptually equal manner and henceforward I moved forward to examine the conceptual nature of PsyCap by using CFA.

Second, after the measurement invariance test and before examining the mediating role of PsyCap in the suggested learning model (Chapter 3, Section 3.4) I carried out construct validation in order to discern the factorial structure of PsyCap by using CFA to test the instrument's empirical validity with a high school population. Based on the significance of the yielded results, I further identified an equivalent model of the latent variables with their respective factor loadings. In the literature on Confirmatory Factor Analysis, many criteria have been considered as a minimum value for appropriate factor loadings such as 0.4 or even 0.32 (see for example Tabachnick & Fidell, 2001). In the current research, a factor loading of 0.4 on the first order construct was adopted to retain an item with relatively solid empirical justification (Bowen & Guo, 2011, p.147; see also Hinkin, 1998).

Thirdly, to examine the correlational relationship between the variables, I carried out correlational analysis and the inter-correlation among the variables was observed by using *Pearson's r* product-moment correlation coefficient. The correlation coefficient *r* measures the strength and directionality of a linear relationship between two variables which always ranges between +1 and -1.

Fourthly, I conducted structural equation modelling to test the validity of the hypothesised learning model with the respective mediating variables. As a multivariate method used to evaluate the reliability and validity of a given model, SEM is considered an analytical technique that examines the path coefficients amongst the variables and the outcome. The complex nature of the proposed model necessitates the use of a data analysis method that is appropriate to examine complex patterns of interrelationships amongst more than two variables, namely a multitude of variables, both simultaneously and in their totality (Schreiber, Nora, Stage, Barlow & King, 2006; Tomarken & Walter, 2005). Hence, through SEM, the model and the variables in their entirety were analysed *simultaneously* and not in sequential steps. In order to evaluate the fitness of the whole

model, the following criteria were adopted as acceptable guidelines for good model fit: GFI .90, CFI .85, RMR (Root Mean Square Residual) and RMSEA < .08 (Bollen, 1989; Hu & Bentler, 1999).

4.9 Results of the Pilot Study

In the pilot study with 45 participants, first I analysed the reliability of the 3 instruments that were used and the bivariate correlation amongst the subscales of PsyCap. In addition, the association between PsyCap, perceived instrumentality, deep cognitive strategies and academic achievement outcomes was also examined. The results of the correlations amongst the variables are outlined in Table 4.3.

Table 4.3

Correlation coefficient among the Subscales of PsyCap, PsyCap, cognitive strategies, instrumentality and achievement

		1	2	3	4	5	6	7	8
1	Self-Efficacy	--							
2	Hope	.50**	--						
3	Optimism	.36*	.63**	--					
4	Resilience	.53**	.59**	.41**	--				
5	PsyCap	.70**	.86**	.74**	.73**	--			
6	Instrumentality	.49**	.46**	.35*	.40**	.59**	--		
7	Deep Strategies	.52**	.69**	.56**	.60**	.73**	.32*	--	
8	Achievement	.46**	.60**	.38**	.49**	.70**	.61**	.55**	--

*p<.05
**p<.01

The reported results indicated positive and significant correlation amongst the subscales of PsyCap and also between PsyCap, perceived instrumentality, cognitive strategies and academic achievement. The strongest correlation was observed between deep cognitive

strategies and PsyCap $r = .73$, $p < .01$ whereas the weakest yet significant correlation emerged between perceived instrumentality and cognitive strategies $r = .32$, $p < .05$. Furthermore, a closer look at the correlational analysis in the pilot study amongst the PsyCap, cognitive strategies and perceived instrumentality showed significant and positive correlation among all the variables with the addition that PsyCap in its totality had strong correlation with Academic Achievement $r = .70$, $p < .001$ and Perceived Instrumentality $r = .59$, $p < .001$. Moreover, by looking into the inter-scale correlations amongst the first-order constructs (self-efficacy, hope, optimism and resilience) and PsyCap, academic hope of high school students had the strongest correlation with the higher-order construct PsyCap with $r = .86$, $p < .001$ followed by optimism $r = .74$, $p < .001$, resilience $r = .73$, $p < .001$ and self-efficacy $r = .70$, $p < .001$.

In conclusion, the bivariate significant correlations observed in the pilot study between the independent variables and achievement outcome had initial implications for understanding the nature of the relationships between the measured variables. Together with the follow-up focus group discussions, a preliminary conceptual conclusion from the pilot study was drawn as below.

1. Although students rarely discuss their future educational plans explicitly, whenever they are prompted to discuss about these plans, they share valuable information such as early preparation for university admissions by enrolling in tutoring courses (SAT, IELTS, TOEFL), their knowledge of the value of their current grades for enrolment in college to specialize in certain majors (for example students who aimed at medicine and engineer valued their current grades more than those who planned a career in business sector).

2. Students express certain beliefs that are related to their education such as areas of confidence to perform well in certain courses and not others. Also, some high school students shared fear of uncertainty for the future. Some of these concerns and worries were related to financial challenges and high tuition fees of the

colleges, fear if unemployment after graduation or inability to get accepted into major of preference.

3. The discussions also showed that some students had developed concrete plans for their future tertiary education such as area of specialization (although some were unsure about their plans), financial arrangements, area of future employment. When asked about their thoughts and feelings about achieving or not achieving such plans, there were myriad of responses such as certainty that despite difficulties other alternatives can be available (such as taking a gap year, enrolling in college prep courses etc).

The synthesis of these discussions and observations were later included in the interpretations of the results.

4.10 Results of Study 1

The purpose of Study 1 was to examine the potential role of high school students' PsyCap in predicting their achievement outcome by investigating the data set for patterns that may emerge from perceived instrumentality and deep cognitive strategies. After discussing the data analysis methods in Section 4.8, below I report the results and examine the findings with respect to the 9 hypotheses that also include the postulated learning model. Later in the chapter, I provide a brief interpretation of the implications of the findings.

First, the descriptive statistics of the scales for Study 1 are provided in the table below (4.4) including the mean and standard deviation of each subscale of PsyCap and the four research variables.

Table 4.4
Mean and Standard Deviations of the Subscales and Scales (Study 1)

Instrument	Mean	SD
Self-Efficacy	22.60	3.57
Hope	21.04	4.72
Optimism	21.04	4.17
Resiliency	21.13	4.07
Psychological Capital	85.55	12.78
Cognitive Strategy	44.22	8.30
Perceived Instrumentality	20.77	3.69
Achievement Level	81.71	7.31

4.10.1 Testing the Research Hypotheses

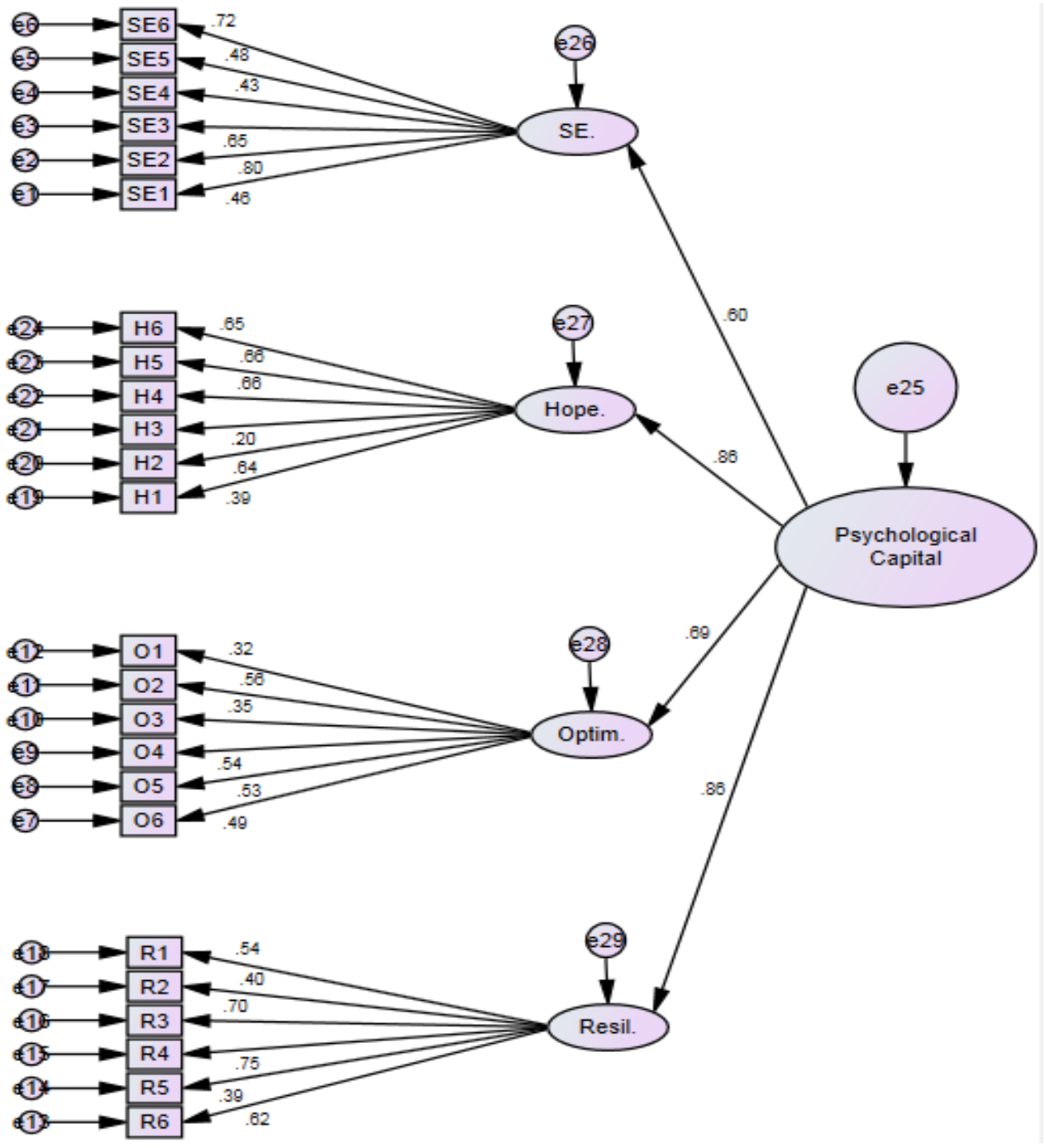
As outlined earlier in the chapter on research methodology, I have utilised CFA and SEM in order to examine the relationships between the variables (measured variables and latent constructs). SEM requires specification of the model based on theory and research in order to understand the patterns between observed and unobserved variables.

H1. It is hypothesised that PsyCap is a second-order construct with four first-order variables namely: self-efficacy, hope, optimism and resilience

Once measurement invariance was observed (Section 4.8.1, Chapter 4), I carried out confirmatory factor analysis for the model with psychological capital as a second order construct and its four facets (self-efficacy, hope, optimism and resilience) positioned as first order constructs. The primary factor loadings are outlined in Figure 4.1

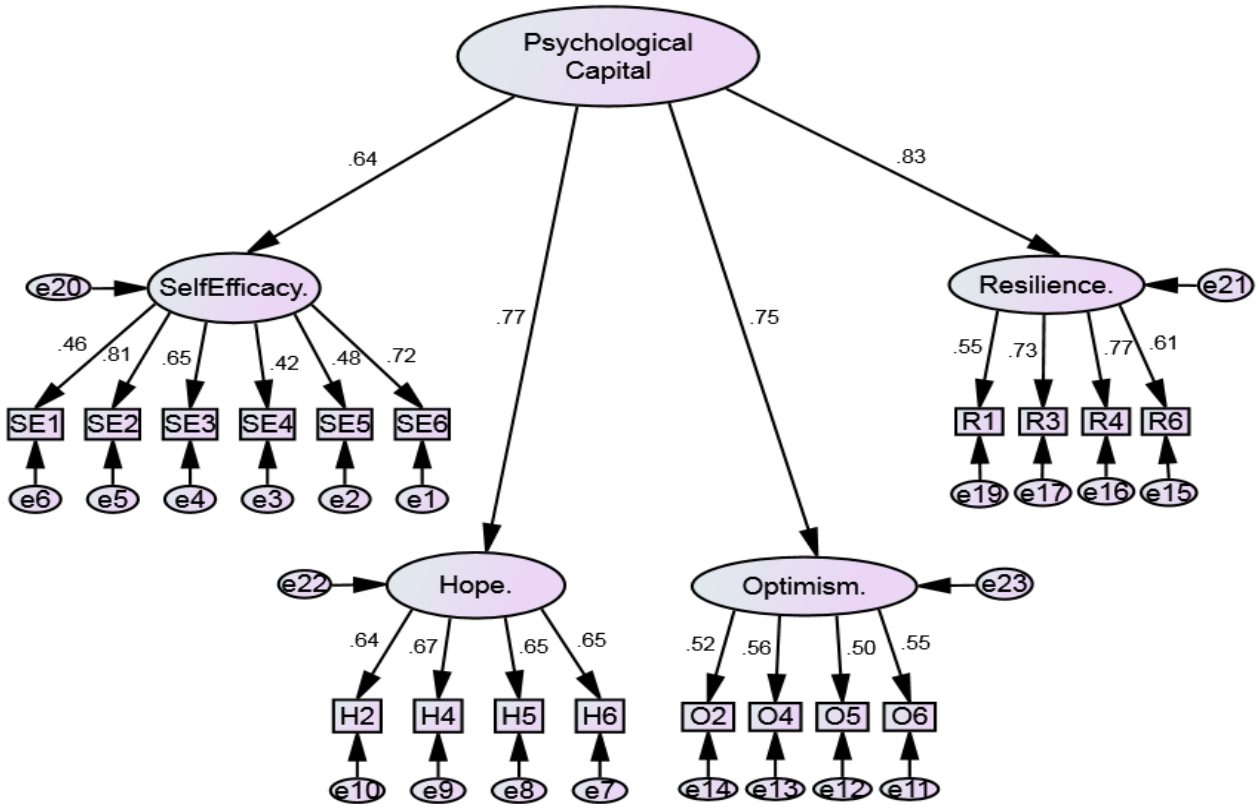
Figure 4.1

Initial Factor Loadings with all 24 items.



Based on the individual factor loadings of the 4 first-order constructs, items that fell below the adopted cut-off 0.4 loading were excluded from the secondary analysis. As indicated in Figure 4.1, most of the factors have reasonably moderate to high factor loadings except for five items: Hope 3 (.20), Optimism 1 (.32), Optimism 3 (.35), Resilience 2 (.40) and Resilience 5 (.39). If 0.32 was adopted as cut-off value for factor loadings, only one factor would have been dropped from the suggested model. With a 0.4 value, five items were excluded and after respecifying the model, another CFA was performed and the results are outlined in Figure 4.2 with respective model fitness indices including GFI, CFI, RMSEA and RMR.

Figure 4.2
Respecified CFA with regression paths



Model Fit Indices: X^2 (146) = 355.221, $p < .01$, GFI = .89, CFI = .86, RMSEA = .072, RMR = .071.

Moreover, as indicated in the data analysis section, to evaluate the whole model, the following criteria were adopted as acceptable guidelines for good model fit: GFI .90, CFI .85, RMR (Root Mean Square Residual) and RMSEA < .08 (Bollen, 1989; Hu & Bentler, 1999). All the 19 items in the new respecified model indicated good to high factor loadings on the first factor constructs. The results of the re-specified model with 19 item factor loadings above 0.40 yielded satisfactory to good fit for the data with X^2 (146) = 355.221, $p < .001$, GFI = .89 (satisfactory), CFI = .86 (good), RMSEA = .072 (good), RMR = .071 (good). The significance of X^2 specifies a model's covariance structure that is significantly different from the observed covariance. In other words, statistically significant chi-square implies that the hypothesised model is a poor fit for the collected data. In the current CFA, the significance of the X^2 does not necessarily imply poor fit of the data. In fact, there are two major interpretations that can be drawn from this significance. First, according to Kenny (2015) in models with participants between 75-200, chi square is a plausible indicator of the model's fitness; however, in models with cases above 400 the chi square is always expected to yield a statistically significant outcome. I assume the number of cases in the current study (*N = 304)* can be a potential reason for yielding a significant chi square result. Secondly, interpreting the significance of the chi square offers a dichotomous decision on whether to accept or reject a hypothesised model without giving adequate information on the degree of fit that can be derived from other indexes such as GFI=.89 which is very close to .90 as good criteria for fit of the model, CFI = .86 which is above .85 of the adopted value, and RMSEA = .072 & RMR = .071 that are below .80 criteria for a good model. Except the chi square, the other indices indicate relatively acceptable to good fit of the model respecified 19 items model.

In addition to carrying out CFA, I compared the hypothesised a priori model of PsyCap as a second order factor construct against various three-factor models and eventually with a single factor model where all the items were loaded onto one single latent PsyCap factor. In the alternative models, all the factors were rotationally merged with respective other factors and the difference between chi-squares between the baseline model (four-

factor hypothesised model) and the respective three models were also tested for significance. The results are outlined in the Table 4.5.

Table 4.5

Comparative Fit Indexes between the Hypothesised and Competing Models

Models	X^2	*df*	X^2	RMSEA	CFI	GFI
4 Factors Model with 24 Items	606.22	248		.069	.802	.857
4 Factors Model with re-specified 19Items	358.268	148		.068	.863	.887
3 Factors Model Hope & Resilience Emerged Self-efficacy, Optimism	423.642	149	65.374* *df=1*	.078	.821	.863
3 Factors Model Hope & Optimism Emerged Self-efficacy, Resilience	416.310	149	58.042* *df=1*	.077	.825	.863
3 Factors Model Optimism & Resilience Emerged Self-efficacy, hope	411.076	149	52.808* *df=1*	.076	.829	.868
3 Factors Model Self-efficacy & Hope Emerged Optimism, Resilience	500.100	149	141.832* *df=1*	.088	.771	.831
3 Factors Model Self-efficacy & Optimism Emerged Hope, Resilience	437.109	149	78.841* *df=1*	.080	.812	.852
3 Factors Model Self-efficacy & Resilience Emerged Hope, Optimism	528.156	149	169.888* *df=1*	.092	.752	.826
One Factor Model as indicator of PsyCap	627.136	152	268.868* *df=3*	.102	.690	.797

*P < 0.01

Cut-off values for goodness of fit: GFI .90, CFI .85, RMR & RMSEA<.08

The yielded results indicated that the hypothesised model with PsyCap as a second order factor best fits the data against the other competing models based on RMSEA, CFI & GFI indexes. As reported, the one factor model produced the highest chi-square and poorest goodness-of-fit indices, thus fitting the data poorly with X^2 (152)=627, GFI=.80, CFI=.70 & RMSEA=.10. The various factor models (self-efficacy, resilience emerged,

hope and optimism) also resulted in high chi-square and low goodness-of-fit whereas the four-factor model with the respecified 19 items resulted in the lowest chi-square and highest goodness-of-fit indexes. These empirical inferences lend support for H1 of the current research which is also in concert with the findings from Luthans, Avolio, Avey & Norman (2007) with respect to the second-order factor of PsyCap having a robust factor structure.

In conclusion, in line with the existing literature, the results confirm the conceptual and factorial structure of PsyCap as a second-order construct with four underlying first order observed variables that is reasonably consistent with the collected data. However, unlike previous empirical examinations, the conceptual and factorial structure was not validated in high school students previously. Hence, by introducing the changes related to the number of items and the rewording of the original scale, the results provide robust validation for future use of PsyCap as a psychometrically viable instrument in a high school context.

In summary, for hypothesis 1, I started with CFA by fitting the a priori model with six items for each of the subscales of self-efficacy, hope, optimism and resilience and consequently fit individual subscales into the second-order construct PsyCap. After adopting 0.40 as cut-off point, I respecified the model and the results of the CFA with the respecified model supported the suggested higher-order construct of PsyCap in a high school student population. Thus, the collected data provided measurement support for factor structure and consequently H1 of the current research is supported.

4.10.2 Results of the Correlational Analyses

In this section, the results for the remaining Hypotheses 2 to 7 will be explored. First, Table 4.6 below outlines the descriptive statistics including the mean and standard deviation of all the variables of the research including age and grade level of the participants.

Table 4.6

Descriptive Statistics of all the variables

	Minimum	Maximum	Mean	Std. Deviation
Self-Efficacy	11	30	22.63	3.970
Hope	11	38	21.73	3.689
Optimism	11	30	21.27	3.320
Resilience	9	29	20.74	3.915
PsyCap	46	113	86.36	11.414
Instrumentality	5	25	20.23	3.880
Strategies	19	60	44.88	7.393
Achievement	51	100	80.25	9.763

Secondly, the correlational analysis results are indicated in Table 4.7. As indicated in the data analysis section, the inter-correlation among the variables was investigated using *Pearson's r* product-moment correlation coefficient. The correlation coefficient *r* measures the strength and directionality of a linear relationship between two variables which always ranges between +1 and -1.

Table 4.7

Correlation coefficients of all the variables

	Self-Efficacy	Hope	Optimism	Resilience	PsyCap	Perceived Instrumentality	Deep Cognitive Strategies	Achievement
Self-Efficacy	-							
Hope	.45**	-						
Optimism	.35**	.43**	-					
Resilience	.42**	.59**	.45**	-				
PsyCap	.74**	.81**	.71**	.81**	-			
Perceived Instrumentality	.39**	.43**	.16**	.41**	.46**	-		
Deep Cognitive Strategies	.43**	.48**	.27**	.40**	.52**	.54**	-	
Achievement	.15**	.27**	.25**	.18**	.27**	.24**	.22**	-

*P<0.05

**P<0.01

H2: Correlational analysis indicated that the PsyCap of high school students is positively and significantly correlated with their instrumentality of learning tasks, $r = .46$, $p < .01$. This moderate correlation provides evidence on the association between students' perceived instrumentality and their psychological capital. This finding lends support for H2 of Study 1.

H3: For the third hypothesis, the results indicated that high school students' PsyCap and their use of respective deep cognitive strategies are significantly and positively correlated $r = .52$, $p < .01$. This result provides evidence for the stipulated Hypothesis 3. Similar to evidence that supports H2, this finding is in line with the stipulated hypothesis. In fact, the same observation is made in the pilot study where it was indicated that PsyCap and cognitive strategies had the strongest correlation compared to other 2 variables $r = .73$, $p < .01$.

H4: Hypothesis four is concerned with the correlation between PsyCap and students' learning outcomes. The results show that PsyCap was positively and significantly correlated with achievement $r = .27$, $p < .01$. Although significant, the value r indicates relatively weak correlation between the two variables. This finding is in concert with previous research conclusions which have observed that PsyCap of students positively predicts their successful learning (Luthanset al., 2012; Tjakraatmadja and Febriansyah, 2007). However, as discussed earlier, the relationship between PsyCap and achievement was not examined in a school setup and thus this finding contributes to the literature in observing a positive effect of PsyCap on students' achievement in a high school setup.

H5: This hypothesis assumed a positive association between perceived instrumentality and deep cognitive strategies. The analysis of results indicated that both of the variables are significantly and positively correlated $r = .54$, $p < .01$. Similar conclusions have previously been drawn from many studies which have indicated that students' utility value of learning explains the deeper approaches that they utilise. For example, Simons et al. (2004) concluded that when students attach certain value to their learning task they are more likely to utilise deep rather than shallow learning approaches. This conclusion is

in line with previous studies (Hortsmanshof & Zimtat, 2007) which indicate that students who use extended future time perspective with distant goals envisage deeper cognitive strategies.

H6. It was hypothesised that perceived instrumentality is positively and significantly correlated with academic achievement. I examined the correlation between perceived instrumentality and academic achievement and the results showed significant and positive correlation $r = .24$, $p < .01$. This indicates that those high school students' who identify their learning experience as useful for attaining future goals perform better than their classmates who attach less value to their learning. Previously, Simons, Dewitte & Lens (2004) observed the role of instrumentality in predicting performance and concluded that the two variables are positively correlated. Possibly, students with high instrumentality devise more effective learning habits and show perseverance in times of difficulty and consequently achieve higher results.

H7. It was hypothesised that deep cognitive strategies that students use are positively and significantly correlated with academic achievement. The results of the data analysis showed that deep cognitive strategies are also positively and significantly correlated with academic achievement $r = .22$, $p < .01$. However, unlike previous findings, the literature is somehow inconclusive with empirical findings that pertain to the relationship between deep versus shallow cognitive strategies and academic achievement. For example, Ruban & Reis (2006) observed that deep learning strategies correspond to higher academic achievement whereas other empirical studies have reported no significant correlation (Phan, 2006). In summary, readings from the results for the correlational analyses lend support for H2, H3, H4, H5, H6 & H7 of the current study.

4.10.3 Multivariate Mediational Analyses

After providing the bi-variate correlation coefficients, the last two hypotheses of the current research examined the proposed mediating role of students' psychological capital and learning strategies in explaining the effect of perceived instrumentality on academic

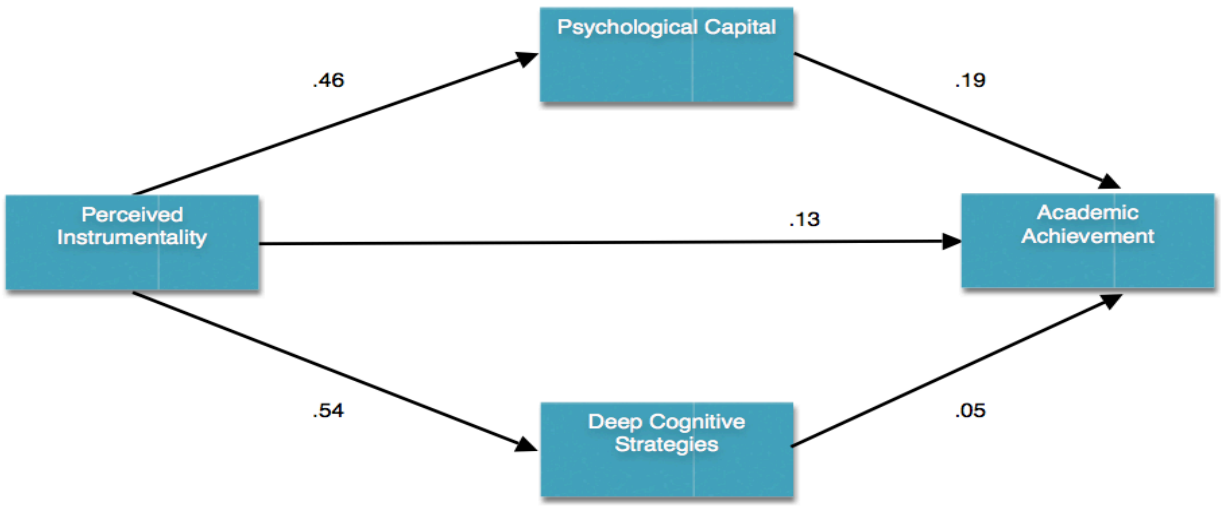
achievement (H8). Secondly, the last hypothesis (H9) proposed a learning model and examined the goodness of fit and its significance in predicting achievement outcomes.

Multivariate mediational analysis refers to the relationship where the mediating variables illustrate the mechanism through which the independent variable(s) influence the dependent variable (MacKinnon, 2012). The primary purpose of executing mediational analysis is to understand the specific explanation of this effect.

H8. It is hypothesised that PsyCap and deep cognitive learning strategies mediate the relationship between perceived instrumentality as the independent variable and academic achievement as the outcome variable.

To examine Hypothesis 8, I tested the hypothesised direct and indirect effects of the independent variable on the dependent variable, achievement outcome, in one model by using SEM in Amos. In order to conduct the mediational analysis, I followed Cheung & Lau's (2008) procedures on mediational analysis by using 1000 BC bootstrapping and 95% confidence intervals. First, I report the standardized direct effects in the Figure 4.3 below.

Figure 4.3
Model Structure with the Standardized Coefficients



Single-headed arrows (paths) indicate *direct effect* of one variable on the other which appears in the output table as a standardised regression coefficient. The standardised (β) coefficient refers to the change in standard deviation in the outcome variable (achievement outcome) for every change in the standard deviation in the predictor variable(s). Regarding the strength of the standardised (β) path coefficient, different reviews have provided various interpretations. For the purpose of this study, I have adopted path (β) coefficient >.25 as large, >.10 as moderate and >.05 as small (Keith, 2006). The results of Study 1 indicated moderate estimated direct standardised regression coefficient from perceived instrumentality to academic achievement with $\beta = .13$, $p < 0.05$. The standardized regression coefficient from PsyCap to achievement was $\beta = .19$, $p < 0.05$, which is classified as moderate to large. The standardized regression coefficient from deep cognitive strategies to achievement was $\beta = .05$, $p > 0.05$, which was an insignificant path indicating that there is no mediating effect from perceived instrumentality on academic achievement via deep cognitive strategies.

Afterwards, the indirect effect was tested using a bootstrap estimation approach with 1000 samples (Shrout & Bolger, 2002). The results indicated that the indirect effect of perceived instrumentality on achievement via PsyCap was $\beta = .115$, $p < 0.05$ with 95% CI: 0.040 - 0.205. The significance of the indirect coefficient and the non-zero confidence interval suggests that PsyCap partially mediates the relationship between perceived instrumentality and achievement outcomes. This finding suggests that perceived instrumentality explains some unique variance on academic achievement that is not also explained by PsyCap.

Moreover, since no significant direct path was observed from deep cognitive strategies to achievement outcome, one can conclude that no mediational effect was expected to be observed for the independent variable (perceived instrumentality) on the dependent variable via the mediating variable (deep cognitive strategies). In sum, H8 was partially supported since only PsyCap partially mediated the relationship between perceived instrumentality and achievement outcomes and deep cognitive strategies didn't play a mediating role.

H9. It is hypothesised that the postulated model significantly predicts students' learning outcomes.

By drawing the direct paths from independent to dependent variables, full model testing by structural equation modelling in AMOS was carried out. The selected goodness-of-fit statistics for the hypothesised overall model indicated $X^2 = 43.5$ with degree of freedom 1, $p < .01$. By remembering the sensitivity of chi-square to the sample size, alternative indices for fit were used and indicated comparative fit index CFI value .82 and Goodness of Fit Index, GFI .94. As a reminder, for the purpose of this study, the cut-off values for goodness of fit was GFI.90 and CFI.85. As for the model, these values of goodness-of-fit indexes indicated that the hypothesised full structural equation model *adequately* described the observed sample data and support H9 of Study 1.

4.11 Synergic Effect of PsyCap on Achievement

Once the nine hypotheses were tested, I carried out further analysis with the gathered data to examine the suggested synergistic effect of PsyCap on dependent variable or the achievement outcomes. This analysis did not constitute part of the research hypothesis; nevertheless, it was carried out in order to explore the theoretical aspect of PsyCap's synergic effect on performance outcome.

The literature on PsyCap observes that one of the properties of PsyCap is its synergistic effect which implies that the overall construct as the amalgamation of the four facets has stronger predictive power on desirable outcomes compared to its individual components (Luthans, Avolio, Avey et al., 2007). Also, there is plausible empirical support that observes the independent effect of individual facets of PsyCap on achievement outcomes (Chapter 3, Section 3.3). In order to understand the nature of these 2 kinds of effects, synergic versus individual component's contribution in explaining the variability in achievement outcomes compared to the overall PsyCap, I further carried out hierarchical regression analysis. In this regard, the four individual subscales of PsyCap were first regressed on academic achievement independently. The results of all the regression analysis is outlined in the table below 4.8.

Table 4:8

Regression Analysis with the Individual Subscales of PsyCap and overall PsyCap

	Beta	*t*	*p*	*F*	*df*	*p*	Adj. R^2
Self-Efficacy	.151	22.36	<.001	7.02	302	<.005	.023
Hope	.266	20.07	<.001	23.07	302	<.001	.071
Optimism	.246	18.37	<.001	19.46	302	<.001	.061
Resilience	.184	23.77	<.001	10.54	302	<.005	.034
PsyCap	.273	14.57	<.001	24.33	302	<.001	.075

Note: The dependent variable of all the regressions was achievement outcome

First, a simple regression was calculated with self-efficacy and a significant regression equation was found, β=.151, (302)=22.36, *p<.001,* F(1,302)=7.02, *p<.001* and an R^2 of .023. Also, simple regression was calculated with hope and a significant regression equation was found, β=.266, (302)=20.07, *p<.001,* F(1,302)=23.07, *p<.001* and an R^2 of .071. Finally simple regression was calculated for optimism and resilience and a significant regression equation was found, β=.246, (302)=18.37, *p<.001,* F(1,302)=19.46, *p<.001* and an R^2 of .061 & β=.184, (302)=23.77, *p<.001,* F(1,302)=10.54, *p<.005* and an R^2 of .034, respectively.

Second, PsyCap in its totality was regressed on academic achievement and a significant regression equation was found, β=.273, (302)=14.57, *p<.001,* F(1,302)=24.33, *p<.001* and an R^2 of .075.

Thirdly, when merged together in the regression model, the four subscales predictor model was able to account for around 10% of the variance in academic achievement outcome, $F(4, 299) = 7.60$, $p < .001$. In fact, while these individual components significantly predicted achievement bi-variety yet when they regressed together in one equation, only hope and optimism significantly predicted the dependent variable with β=.199, (299)=2.75, *p<.005 &* β=.162, (299)=2.53, *p<.05,* respectively.

Hence, by having in mind the time-lag research design that measured achievement outcomes five months after the initial study, one can suggest that hope and optimism have specific predictive power on achievement above and beyond the self-efficacy and resilience sub-facets of PsyCap. This last finding observes that although the component factors significantly predict academic achievement individually, when they are merged together, only hope and optimism significantly predict learner's academic achievement. For this reason, a second experimental study was designed by stipulating a controlled failing condition in order to examine the role of academic hope in predicting high school students' learning cognitive strategies to sit for university admission exams.

4.12 Conclusion

From the reported data, the postulated nine hypotheses were supported except the fact that there was no reported mediating effect of deep cognitive strategies on academic achievement. The participants as high school students interpreted PsyCap in a conceptually equal manner regardless of their level of academic achievement. By conducting CFA, five items were eliminated from the model and the respecified model indicated good fit with the observed data which suggests that PsyCap is a higher order construct with a robust four factor structure. This provides measurement support for the psychometric properties of the research variable. Finally, as for the proposed learning model, the values of goodness-of-fit indexes adequately described the observed sample data and supported the assumption that PsyCap partially mediates the effect of perceived instrumentality on academic achievement while deep cognitive strategies did not have any mediating effect.

4.13 Discussion on the Yielded Results of Study 1

The following sections will provide preliminary interpretation on the results in the light of various theoretical and conceptual frameworks. Later, in Chapter 6, more comprehensive interpretation of the results will be provided.

Previous studies on PsyCap have observed a positive influence on learning outcome. In Study 1, I further tested and analysed the processes involved in depicting the nature of these influences by modelling the research variables in cognitive, motivational and achievement contexts. This synthesis will contribute to the previous empirical and theoretical literature on the role of positive motivational beliefs in explaining learning outcomes in a high school context.

4.13.1 Construct Validation and Factor Structure

Before testing the hypothesised conceptual model, I first tested the psychometric validity of PsyCap by carrying out a measurement invariance test as part of Confirmatory Factor Analysis as a precondition for further conceptual hypothesis testing. In this regard, different researchers have set various indexes to determine the fitness of the model and most of them agree that making empirical judgments on fitness by testing for the significance of chi-square is often insufficient due to the fact that chi-square is sensitive to the sample size (Hooper, Coughlan & Mullen, 2008; Jöreskog & Sörbom, 1993). Due to the sensitivity of the overall sample size other indexes were considered to test the acceptability of the model fit (Barrett, 2007) and the results supports measurement invariance across the two high versus low achieving groups.

Hypothesis 1 aimed to ascertain the factorial structure of PsyCap and to examine the path coefficients from the unobserved to the observed variables. This test is in line with the recent review on the psychometric properties of the construct by Dawkins et al. (2013) who advised further investigation on the factor structure of PsyCap to enhance its construct validity. In confirmatory factor analysis, by having in mind the theoretical underpinning of the latent construct, the regression paths were examined by using Structural Equation Modeling. As an explanation of the results, the validation of the psychometric properties of PsyCap was theoretically and empirically necessary especially by having in mind the fact that the construct has not been previously investigated in schools with a high school population. The results in this regard indicated that PsyCap has robust psychometric and structural validity not only in the domain of organisational industry but also in the domain of achievement motivation. Moreover, the

outcome of the data analysis supported the first hypothesis which assumed that psychological capital as a multidimensional construct is comprised of four interrelated but empirically and conceptually distinct facets. Also, the obtained estimates of the parameters and the goodness of the fit indexes suggested that the model structure with the four latent variables - self-efficacy, hope, optimism and resilience - was empirically plausible.

4.13.2 Discussion on the Observed Relationships Amongst Instrumentality, PsyCap, Cognitive Strategies & Achievement

Despite a significant number of studies that have identified predictors of positive learning outcomes, much remains to be explored about the precedents of successful learning. The literature assumes an important role for external and uncontrollable factors in influencing students' learning yet I contend that equally important is the role of internal, malleable and controllable motivational factors in influencing students' achievement such as motivation beliefs. For example, Byrnes (2003) reported that when children thrive in a positive motivating environment where they acquire the necessary skills for learning, other external factors (gender, race and ethnicity) become insignificant in explaining achievement variance.

The results of Study 1 indicated that students' instrumental value of learning positively predicts their psychological capital. Due to the nature of this study, which examines students' deep cognitive strategies and their respective summative performance as indicator of achievement, I interpreted the results in the light of Expectancy-Value theory as a guiding framework for many reasons (Wigfield and Eccles, 2000). First, perceived instrumental value of learning is a future oriented general motivational perception rather than a task specific goal as was previously conceptualised by Wigfield (1994). For one reason, the way students perceive learning environment, future goals and the value of high performance shapes their motivational beliefs and competency. Similar to the way that the classroom learning environment gives rise to goal orientation and what is defined as successful mastery learning, I argue that students' competency belief, hopeful

cognition, optimism and resilient behaviour are influenced by the perception of the criticality of learning for future gains (Ames, 1992). Most likely the messages that students receive relating to the importance of learning for the future such as graduation, college enrolment and entering the job market positively influence their motivational belief in becoming self-efficacious learners and hopeful students. On the other hand, those that perceive learning as less important for personal plans are less likely to adopt efficacious approach to learning or develop less hopeful and positive learning pathways due to a lessened incentive value.

4.13.3 Mediating Role of PsyCap

There is growing scholarly support for the positive consequences that arise from PsyCap; however, I believe that further investigation is needed to observe its role not only as a predictive but also as a mediating variable in an achievement motivation setting. The current Study 1 lends support for the enhancing or fading power of PsyCap on achievement outcomes and highlights the *directionality* of the influence of the construct. However, there is a biased tendency to highlight the predictive role of PsyCap on learning outcomes without attempting to gain a deeper insight into its association with other variables such as deep cognitive strategies. To answer this conceptual gap and move beyond a cross-sectional study, the results supported the positive and significant bivariate correlation between PsyCap and cognitive strategies although this correlation was not introduced in the postulated learning module due to statistical reasons[2].

In this regard, studies that have investigated the mediating role of PsyCap in educational literature are rare except in Riolli, Savicki and Richards' (2012) work where they concluded that the PsyCap of university undergraduate students mediates between their

[2] The AMOS program that was used to observe the fitness of the model rejected the drawing of the correlational path between the 2 mediation variables for simultaneous analysis. For this reason, the bivariate correlation between deep cognitive strategies and PsyCap was not measured in the postulated model, Instead, bivariate correlation was computed independently without the presence of the independent and the dependent variables.

academic stress levels and psychological and mental wellbeing. Multiple research findings have highlighted causal factors that contribute to academic stress such as pressure during examinations and grading periods, meeting deadlines, poor time management strategies, lack of coping skills in addition to the association of academic stress to varying kinds of illnesses (Houghton, Wu, Godwin, Neck & Manz, 2012; Stallman, 2010). As a buffer against the adverse effects of stress on emotional and academic functioning, it is believed that individuals' motivational beliefs including the four facets of PsyCap act against these overwhelming feelings and help students develop resourcefulness, coping mechanisms and enhanced adjustment systems (Culbertson, Fullagar & Mills, 2010). Although the above-mentioned study (Riolli et al., 2012) reported a strong mediational role for PsyCap between academic stress and mental wellbeing, the role of students' cognitive factors was largely overlooked. Instead I argue that students' cognitive interpretation and processing of the contextual information determines their respective responses (Bandura, 1997).

Meanwhile, cognitive models of goal attainment processes have previously minimised if not eliminated the role of positive emotions and motivational self-beliefs in learning processes. For example, as mentioned previously, until the introduction of the more comprehensive Achievement Emotion Questionnaire as an instrument to examine students' emotions in learning and performance, most of the instrumentation and empirical research centred on testing anxiety exclusively (Pekrun, Goetz, Frenzel, Barchfeld & Perry, 2011). In similar "cold and sometimes negative" learning contexts, learning and performance is often examined as mechanical processes with the role of positive emotions and motivational beliefs often disentangled from the students' learning. The mere possession of the necessary strategies, approaches and skills does not ensure the activation of purposeful learning behaviour as was concluded in Study 1 where deep cognitive strategies didn't predict academic achievements. In fact, the presence of positive or negative emotions has the potential to contribute to learning outcomes and performance behaviour either by enhancing or curbing the achievement process. As negative emotions such as anxiety can be detrimental for the learning process, positive emotions and motivational beliefs that students' hold and nurture facilitate learning.

4.13.4 The influence of PsyCap on Academic Achievement

The results of the current research indicate that PsyCap as an amalgamation of four subscales positively predict high school students' academic achievement. This new contribution to the field of positive educational psychology in high school context indicates that beyond the well-established successful influence of individual scales of self-efficacy, hope, optimism and resilience on achievement, PsyCap as a higher order construct has stronger positive predictive power on achievement with β=.273, (302)=14.57, *p<.001,* F(1,302)=24.33, *p<.001* and an R2 of .075. In this line of research, there are emerging empirical enquiries examining the role of PsyCap in academic settings with reported positive effect of PsyCap on achievement. For example, Rattray (2016), observed that with first year undergraduate students PsyCap was positively associated with students' self-regulation and academic performance. In the same study Rattray suggest further exploration on the potential role of PsyCap in studying liminality in troublesome knowledge while students are transforming towards acquiring threshold concepts. Also, previously, Luthans et al. (2012) had concluded a positive association between business students' overall PsyCap and their respective GPA with around 100 participants. Most likely, the interactions and conservation of these four resources help students to approach, explore and cope with various learning challenges with positive motivational beliefs and strategies that ensure successful outcomes. In turn, conversely, attaining positive learning outcomes feeds the individual with further beliefs of efficacy, hopeful cognition, optimistic outlook towards the future and resilience experiences to overcome failures.

4.14 Conclusion

In conclusion, in Chapter 4, I have outlined the rationale for choosing a quantitative research method. The chapter highlighted the background and demographic characteristics of the participants both in the pilot and Study 1 in addition to the measurements used for data collection. After explaining the procedures, the ethical considerations and the limitations of the study were summarised. Finally, the 9

hypotheses of Study 1 were tested and the yielded results were reported with the conclusions that pertained to the unique predictive power of hope and optimism on academic achievement. In Chapter 5, I will introduce the rationale and background of carrying a second study that was driven from the findings of the regression analysis of the individual subscales of PsyCap on academic achievement. Also, the methodology of the study is outlined, the data analysis and results with a short discussion on the yielded outcome.

Chapter 5

Study 2

The Moderating Effect of Academic Hope on the Utilisation of Deep Cognitive Strategies

5.1 Introduction to Study 2

The results of Study 1 indicated that PsyCap and its individual sub-facets significantly predicted academic achievement. Also, when individual subscales were regressed, only hope and optimism emerged as significant predictors of achievement when the later was measured after five months. Since this is a new finding in the area of motivational belief, a second experimental study was designed that aimed to capture the causal influence of academic hope in explaining the way students generate and utilise cognitive strategies.

5.2 Literature Review on Academic Hope

A sailor without a destination cannot hope for favourable wind (Leon Tec)

In this quote, one can infer that goals and hope complement each other and goals remain unanswered appeals if the individual does not possess plausible routes for their achievement (Snyder, 2000). Hopeful thinking without linkage to previously set-goals does not create purposeful cognitive actions or movements. There is rich literature in educational psychology on outcome-related emotions yet additional research that revolves around activity-related achievement emotions and their influence on motivation, learning, and performance is encouraged (Pekrun & Stephens, 2010). This line of research is mostly examined within Control-Value theory (Pekrun, 2006). Accordingly, students' achievement related positive emotions are influenced by their perceived control over the learning activity and the subjective value of the activity for future gains and negative emotional states such as boredom and hopelessness negatively predict achievement outcomes (Pekrun, Molfenter, Titz & Perry, 2000).

Hope is not only an emotion but also a dynamic cognitive motivational system of beliefs (Snyder et al., 1991). In this regard, it is argued that emotions follow cognitions in the process of goal pursuit behaviour where goals are considered the anchor of hope and the target that mobilises a sequence of mental actions (Snyder, 2000). Throughout the literature, the positive influence of emotions in explaining students' cognition is well established. For example, in times of complex situations, positive emotions and affect are believed to be associated with decision-making and enhanced problem solving that involve adapting cognitive processes (Isen, 2001). However, until the advent of Control-Value theory, the role of emotions in explaining learning behaviour was mostly confined to its association with negative affect. With the work of Pekrun, Goetz, Titz and Perry (2002), myriad emotional states were investigated and it concluded that the emotional state of students whether anxiety, hope, gratitude, shame or guilt acts as either facilitator or barrier in the learning processes.

In the literature on affect in learning, achievement related emotions are associated with learning achievement outcomes that are classified as retrospective emotions such as shame and pride that students find in their prior learning experiences including success and failure. Also, achievement related emotions could be outlined as *prospective* achievement related emotions including hope that are related to learning successes and failures (Weiner, 1985). Likewise, Snyder et al. (1991) stated "the quality of emotion for a particular goal-related setting depends on the person's perceived hope in that setting". Hence, hope is an acquired cognitive pattern that comprises of two processes towards completing future goals: agency and pathways. Accordingly, hope is the *motivational* and *cognitive* processes allowing individuals to plan for and execute the pursuit of goals. For a high-hope person pursuing a specific goal, this pathway thinking entails the production of plausible routes, with a concomitant sense of confidence in this route. However, the agency and pathways components of hope are bounded to *goal attainment* cognition. Within the hope theory (Snyder, Feldman, Shorey and Rand, 2002) goals are defined as "hoped-for ends…that an individual desires to get, do, be, experience, or create. Such goals may be extremely large or extremely small [and] … vary in attainment probability, ranging from very high to very low". Hence, the attainment of specific

outcomes or goals is contingent upon the agentic thinking and cognitive pathways that individuals plan to execute. Thus, neither subscale of hope nor the mere existence of thoughtful goals can independently initiate and maintain goal pursuit behaviour unless the pathways, agency and goal operate interdependently.

Hope predicts academic performance when investigated as a positive personality factor (Ciarrochi, Heaven & Davies, 2007), as distinct construct (Rand, 2009) and has unique predictive value on performance even after controlling for previous academic achievement, personality and intelligence (Day et al., 2010). Day et al.'s, (2010) conclusion on the unique variance explained by hope on academic achievement after controlling for previous performance is theoretically and empirically imperative to Study 2 of the current thesis especially by having in mind the fact that prior performance has independent influence on academic achievement level (Harackiewicz, Barron, Tauer & Elliot, 2002). Hence, academic hope has a potential role to play in explaining achievement outcomes and helping students to generate cognitive pathways and strategies. In this regard, Snyder et al. (1991) in their study on the validation of hope scale observed the influence of hope on agency and pathways during stressful periods. In the experiment, all the participants were asked to imagine that in a college course they set a grade goal. The experimental group also received the same instruction but also were informed that "although you have set your goal of getting B, when you first examination score worth 30% of your final grade is returned, you have received a D". The last statement was the experimental stressful condition. Afterwards all the participants were given a questionnaire designed to evaluate their goal-related agency and pathway behaviours. Unlike the neutral condition where the participants did not report significantly different pathways, in the face of a stressor, high hope participants reported more pathways where else low hope students exhibited fewer pathways. By having in mind the fact that students with high hope achieve higher and meanwhile they are also more likely to generate more pathways in the face of goal achieving impairments, the current experimental study was designed to examine the moderating effect of hope in explaining the utilisation of deep cognitive strategies in times of academic failure.

5.3 Study 2: Context & Rationale

In Study 1, I examined the influence of PsyCap and its four-facets on achievement outcomes and concluded that academic hope and optimism are the only facets of PsyCap that predicted learning outcome when the other 2 facets were controlled for. In order to understand the causal effect of academic hope on not only achievement outcomes but also on the nature of the cognitive strategies that students generate and utilise, a second experimental study was designed. Similar to Snyder's et. al study (1991), the experiment in Study 2 aimed to understand the quantity and quality of the strategies that students elicit in an academic failing versus non-failing conditions. However, as an addition in this research, the moderating effect of academic hope on the nature of these strategies with the likelihood of using them was further analysed. Thus, academic hope of the participant as a moderator was assumed to moderate the effect of the experimental conditions as the independent variable on the utilisation of deep and surface cognitive strategies as dependent variable.

In Study 1, PsyCap was positioned to play a mediating role and in Study 2 academic hope is assumed to play a moderating role. Regarding the difference between the mediation and moderation, PsyCap as mediating variable was assumed to account for the relationship between perceived instrumentality and achievement outcome where else academic hope as moderator is assumed to explain the changes on the effect of the experimental conditions on students' cognitive strategies. Baron and Keny (1986) have shed light on the difference between mediation and moderation by concluding that "moderator variables specify when certain effects will hold [and], mediators speak on how or why such effects occur (p.1176).

Hence, the principal thrust of Study 2 was to investigate the causal link between academic hope and the generation and utilization of deep cognitive strategies in academic failing versus non-failing conditions. More specifically, study 2 posed the following as its guiding research questions:

1. In the face of learning adversities, do students generate quantitatively more cognitive strategies (total deep and surface) compared to students in non-failing (neutral) condition?
2. Does academic hope moderate the impact of the experimental conditions on the utilization of deep cognitive strategies?

Based on these research questions, it is hypothesised that:

1. Students in a failing learning condition will generate quantitatively more cognitive strategies compared to students in a neutral learning condition.
2. Academic hope will moderate the impact of the experimental conditions on the utilization of deep cognitive strategies such that those who are higher in hope will utilise more deep strategies compared to those who are lower in hope.

By having in mind the postulated research questions and the two hypotheses, first the academic hope of the participants was measured. After 5 months, the experiment was introduced and the participants were randomly assigned into two groups: academic failing condition which was the experimental group versus non-failing or neutral condition which was the control-neutral group.

The next section will discuss the methodology of Study 2 and then analyse the results in the light of the reported data. The last section will provide a brief interpretation of the reported outcome in the light of Hope and Control-Value theories.

5.4 Participants

The participants in Study 2 were high school students who attended international schools in the state of Qatar. Unlike national/public schools, international schools are known for the diversity of their student bodies who mostly serve expatriate families. Similar to Study 1, as a major requirement to take part in the experiment, I approached schools

(*N=2*) that had adopted international curricula and the students were selected from grades 10 to 12 (*N=152*) with M = 10.56 (SD=.67).

5.5 Design

Experimental research designs are considered to be one of the most appropriate methods to examine the causal influence of one or more independent variables on a potential dependent or outcome variable (Bailey, 2008). The Study 2 was divided into 2 stages. At first stage, the participants completed the modified PsyCap questionnaire that captured their academic hope and the other three facets. After 5 months, the experiment was carried out.

In the second stage, the participants were randomly allocated into 2 groups: experimental versus control groups. The randomization was carried out based on the students' number on the classroom lists that the schools were already using. In order to avoid randomization bias, I cross-checked with the classroom teachers and it was concluded that no other criteria or purpose was used in the numbering of students. Students with odd numbers (1,3,5,7 etc.) were categorized as the control group and the participants with even numbers (2,4,6,8) were considered as the experimental group. Accordingly, the experiment was carried out in the participants' regular classrooms during the morning advisory period and the period 1 of other classes.

Study 2 was designed to capture the quantity and utilization of the elicited strategies of the students in failing versus non-failing conditions and the role of academic hope in moderating the impact of the experimental conditions on the utilised strategies. However, the design did not include any questionnaire to measure the elicited strategies that students generate or utilize (dependent or the outcome variable). Instead after being presented with the experimental conditions, the students were requested through open ended-questions to generate and enlist their utilized strategies. The details of the procedures will be explained in the section 5.7. The major rationale of designing the experiment in this specific way was to understand the nature of the students' cognitive

strategies without limiting the strategies into certain types or categories of strategies. In other words, this method of measuring the elicited strategies as the dependent variable allowed the observation of possibly new, task- specific and creative strategies that otherwise would not have been captured in a specific instrument. In fact, by not providing a specific instrument to capture the dependent variable, more diverse set of data was yielded. The way of data analysis and the yielded results are reported in the sections below.

5.6 Measurements

To measure the independent moderating variable, academic hope, I used the modified PsyCap scale of Study 1. During the time of the data analysis, only the hope subscale was included in the final analysis which indicated an internal reliability of Cronbach's Alpha 0.75, which indicates acceptable to high internal consistency (DeVellis, 2016). With regards to measuring the dependent variable, as mentioned above in the design section, rather than filling a specific instrument that captures their cognitive strategies, the participants generated the learning strategies that they utilise and later indicated the likelihood of using each of the strategies. Hence, unlike Study 1, the design of Study 2 did not include any specific questionnaire to measure the dependent variable. Instead, in order to analyse and categorise the dependent variable, cognitive strategies, I adopted the GOALS-S (Appendix J) instrument that was developed by Dowson & McInerney (2004) in order to categorise the yielded responses for 2 main reasons. First, unlike other instruments, GOALS-S was devised as a comprehensive tool to measure not only students' cognitive and metacognitive strategies but also their academic and social goals. Consequently, based on this instrument some of the reported strategies that were categorised as non-cognitive were excluded from the analysis. Second and more importantly, GOALS-S is one of the few available instruments that is developed and validated with middle and high school students rather than post-secondary students which is the case with other widely used instruments such as MSLQ (Motivated Strategies for Learning Questionnaire). The cognitive component of GOALS-S instrument is divided into 3 subscales (Appendix J):

Elaboration which is composed of 6 items and is operationalized as making connections between current and previously learned information that includes paraphrasing, generating analogies and reviewing previous works. Responses by the participants such as “I revise previous notes”, “I go over and solve past papers”, “I make revision notes”, “I look into examples and try to solve myself”, “I use revision guides”, “I do researching for extra materials”, “I solve extra problems from other books” and “I solve extra exercises” were categorized under elaboration and thematically analysed as deep cognitive strategies.

Organization that is comprised of 6 items and captures the way information is selected, sequenced, outlined, reordered and summarized. Participants who provided responses that matched the 12 items of these 2 subscales were categorized as deep cognitive strategies. Students who enlisted strategies such as “I often take notes”, “I highlight and underline key words”, “I make summaries and notes for later review”, “I use diagrams and pictures to help me understand”, “I use flash & revision cards”, “I understand concepts than solve” and “I take summaries and notes for review before the exams” were analysed as deep cognitive strategies.

The third cognitive subscale of GOALS-S is *rehearsal* which includes listening, memorizing, reciting and naming facts which is also comprised of 6 items. Students’ responses that were thematically categorised under these 6 items were analysed as surface learning strategies. This list included: “I read and copy”, “rewriting”, “I memorise my notes”, “I study by heart”, “I practice”, “I read from the textbook”, “reading through”, “I recite orally”, “I revise more than 1 time” and “I study by solving everything”.

5.7 Procedures

The data collection process of Study 2 was preceded by receiving a written permission and consent from the Durham University research ethics committee. Afterwards, I met with the directors of the two schools and provided a brief background of the purpose of

the study and submitted the right for withdrawal consent to the school directors and the students and parents. To the best of my knowledge as I was informed by the directors, no letter was returned which could have indicated unwillingness to take part in the experiment. Later, after 3 days of the first meeting, I carried out the first stage of the project and distributed the questionnaire and requested from the participants to fill in the PsyCap instrument that was used for Study 1. The classroom list of the students for each participating class was recorded in order to match it with the experimental conditions of the second stage of the project.

After around five months, during the second stage of the study, I visited the high schools again and based on the classroom list that was used to capture the PsyCap of the students the participants were distributed into 2 conditions. After introducing myself again, I started by introducing the research and presented the project by stating that *"the purpose of this study that you will soon participate in is to collect some data with regards to your studying strategies in preparation for university admission examinations."*

In order to prompt them to the types of strategies that they might use, I mentioned that *"at the end of the sheet that you have received you will be directed towards some questions that pertain to some strategies that you use".* Then, I provided few examples of such strategies to prompt them to think and reflect accordingly. Specifically, I mentioned that *"some examples of these strategies that you use can be: You take notes while reading for these tests, you summarise all the main concepts, you revise past exams from different resources, you identify the central ideas and memorise them accordingly…etc.".*

Then, I distributed the questions and allocated 15 minutes for all the students to complete the task. All of the participants received the same length of time to complete the task. Moreover, the participants were not aware of the experimental conditions of each others. The scenario in the neutral condition mentioned the following statement (Appendix I):

> By considering your preparation for university admission, please take some time to reflect on the learning strategies that you use for sitting for admission exams such as SAT, ACT, TOEFL or IELTS etc.
> Before writing the strategies that you use to study for such exams, think about how efficiently and effectively are you learning? What approaches you use to manage your time and organize different resources? Do you read critically or write for different purposes? How you take notes? Do you estimate your answers when you are unsure?

The participants in the failing condition were presented with the following scenario:

> By considering your preparation for university admission, please take some time to reflect on the learning strategies that you use for sitting for admission exams such as SAT, ACT, TOEFL or IELTS.
> Now, as part of the university preparation process, imagine that you have received a teacher's concern stating that you might not meet the minimum exam scores requirement to be enrolled in your preferred university major.
>
> After being put in that hypothetical situation, think about how efficiently and effectively were you studying? What approaches you used to manage your time and organize different resources? Did you read critically or write for different purposes? How often you took notes? Did you estimate your answers when you were unsure of them?

After distributing the papers, once again I informed the students that "*now please provide the strategies that you use and then rate them accordingly from 1 (very rarely) to 5 (always)".* The difference between the two experimental groups was the manipulation of the statement "Now, as part of the university preparation process, imagine that you have received a teacher's concern stating that you might not meet the minimum exam scores requirement to be enrolled in your preferred university major". This statement implied a hypothetical failing condition and/or academic stressful situation.

After 15 minutes of the experiment, I collected all the papers and thanked the students for their participation. After reiterating the confidentiality of the provided answers, I debriefed the participants on the experiment and explained that "*the failing condition in the experimental group was a made-up scenario and it was only created for the purpose of this specific research*." Also, through talking circle time for around 25 minutes, I verified that the students have well understood the task and answered by providing the strategies that they use to sit for similar exams. At the last stage, I delivered a PowerPoint presentation and introduced potential methods and techniques on how to improve in such admission examinations (SAT, TOEFL, etc.). This presentation was based on my professional knowledge and experience as guidance/university counsellor. This procedure presumably ameliorated the hypothesized negative condition that could have been created in the research.

Finally, in order to safeguard the individual rights and the emotional and psychological wellbeing of the participants, I ensured that the participation in the 2 Studies was on voluntary basis with the right of every student to withdraw at any time of the experimentation period. The anonymity and confidentiality of all the information and answers was fully respected. As for the potential emotional harm that could have been unintentionally caused by the failing condition of the experimental study, I dedicated a focus group session after the experiment to reiterate the fact that the failing scenario was hypothetical and written for researching purpose. Moreover, I delivered a short presentation and provided detailed hints on how to actually perform better on university admission exams. This session aimed to ameliorate any negative effect and it was intended to support the students in being better prepared for higher education. In sum, no major ethical concerns were revealed in the current research project since the students' voluntary participation, anonymity and confidentially were respected by having in mind the ethical values of a research student.

5.8 Analysis of Data

The total number of students who provided responses was *N=131* and a further 21 answer sheets were returned without any responses. Consequently only the 131 papers were analysed. As outlined in hypothesis 1, in order to examine the mean differences between the experimental and the control groups on the quantity of the cognitive strategies that students elicit, I carried out an independent samples t-test. An independent sample t-test is a method of analysing the mean differences of one group to another on a particular variable. The assumptions for the independent sample t-test are the following:

1. Assumption of independence: 2 independent categorical groups that represent the independent variable. In the case of study 2, it was the failing and non-failing conditions.
2. Assumption of normality of distribution: the dependent variable (elicited cognitive strategies) should be normally (approximately) distributed and should be measured on a continuous scale.
3. Assumption of homogeneity of variance: the variances of the dependent variable should be equal.

To test the hypothesis that participants in the failing condition will elicit quantitatively more strategies compared to participants in the non-failing condition, I carried out a two-tailed independent sample t-test by specifying alpha level at .05. In addition, I observed the effect size by referring to Cohen's (1988) categorisation of effect size. The independent variable was defined as the failing versus non-failing condition. The quantity of the dependent variable was defined as the total number of elicited cognitive strategies (both surface and deep). By using the SPSS, I tested for mean differences in the 2 groups and the results were reported in the section 5.9.

Secondly, in order to test hypothesis 2, a moderation analysis was carried out. In moderation analysis, a moderator is a variable that specifies the conditions under which the predictor is related to the outcome or dependent variable. In Study 2, academic hope as the moderating variable was assumed to moderate or specify the condition under

which the failing versus non-failing conditions were related to the utilisation of deep cognitive strategies. Thus, by carrying out moderation analysis, it implied an interaction effect between the experimental conditions and academic hope. In addition, it was examined whether such an effect was significant in predicting the utilisation of deep versus surface cognitive strategies. To test hypothesis 2, I followed the method of regression analysis with categorical variables suggested by Aguinis (2004) in SPSS by following the below steps:

1. The predictor and criterion variables were first centred. This was achieved by determining the mean of the variables and then subtracting the values.
2. Since the independent variable (experimental condition) was a categorical variable, a dummy code was created and the product terms for the experimental condition as the independent variable and the moderator variable (academic hope) was calculated.
3. Thirdly, after creating the dummy coding variable, I fitted a regression model to predict the dependent variable (utilisation of deep cognitive strategies) from the predictor variable (experimental conditions) and the moderating variable (academic hope). Then, I examined the significance of the both effects and the significance of the general model (R^2), which at this stage did not include the interaction term.
4. Finally, I added the interaction effect between the predictor and the moderating variable to the model and observed the significance of the newly added interaction term and the significance for R^2 change in the new model. The product scores were created based on the mean scores of the variables. Hence, a significant outcome in the new model in the presence of the interaction term was assumed to indicate moderation or interaction effect.

With regards to the method of analysing the elicited strategies (the dependent variable), for hypothesis 1, first I counted all the number of strategies (without differentiating between cognitive versus non-cognitive strategies) and examined the significance in the total number of strategies between experimental and control groups.

Second, a thematic analysis was carried out to discern the cognitive versus non-cognitive (metacognitive or self-regulation strategies) that the participants provided. As mentioned, the literature on cognitive strategies was reviewed and the categorisation of the elicited strategies were based on the GOALS-S instrument that was developed by Dowson & McInerney (2004). As a result, some of the provided answers were categorised as self-regulatory strategies and consequently they were excluded from the final qualitative and quantitative analysis. These answers included "I group-study with friends", "I get a tutor", "I study couple of days before exams", "I make checklist to make sure everything is covered", "I check different websites", "I watch YouTube videos", "I get help from siblings, parents", "I study away from electronics", "I organise time for each subject" and "I prepare a schedule".

Thirdly, I counted the total number of surface and deep strategies that students indicated in the answer sheets. Later, I categorised the cognitive strategies into deep versus surface strategies based on the GOALS-S instrument before carrying out the independent t-test for mean differences.

At the last stage, in order to increase the validity of this thematic analysis, a second educator who was double blind to the experimental conditions looked into the responses and the coding schemes of the responses. After categorizing all the provided responses into deep versus surface strategies into one comprehensive table, I requested a thorough evaluation and categorisation of the provided answers. After her reading and analysis of the yielded responds, only few disagreements that pertained to the yielded strategies were raised and discussed. For example, responses related to the referral and consultation of the internet (YouTube & websites), teachers and tutors were a point of disagreement. I assumed that these responses were mostly self-regulatory approaches rather than strategies where else the second evaluator categorized this as elaborative strategy and consequently analysed them as deep strategy. Besides this disagreement, no significant differences were revealed which indicated certain validity to my initial evaluation and categorisation between deep versus surface strategies. This procedure increased, to a

certain degree, the internal validity of the data analysis due to a significant overlap in the categorisation of the reported strategies.

5.9 Results of Study 2

The results of the experimental study are reported in the 2 sections below and divided into mean differences and moderation analysis for hypothesis 1 & 2

5.9.1 Mean Difference between the 2 Groups

Hypothesis 1: Students in a failing learning condition will generate quantitatively more cognitive strategies compared to students in a neutral learning condition.

First, to test the hypothesis that students elicit significantly more cognitive strategies in the failing condition compared to students in the non-failing condition, I analysed the mean differences in the two experimental groups. An independent sample t-test was conducted to compare the total number of strategies, total number of cognitive strategies and also deep and surface strategies in the control and experimental conditions. The results are outlined in Table 5.1.

Table 5.1
Study 2: Mean and SD of the Experimental (N=83) and Control Groups (N=76)

	Experimental Group		Control Group	
	Mean	SD	Mean	SD
Total Number of Strategies	6.54	1.08	6.00	1.59
Total Cognitive Strategies	3.44	1.88	2.65	1.92
Deep Cognitive Strategies	2.04	1.39	1.71	1.40
Surface Cognitive Strategies	1.40	1.19	1.00	0.98

The results indicated significant difference in the mean in the total number of strategies between the experimental group (M=6.54, SD=1.08) and the control group (M=6.0,

SD=1.59), t(129)=2.28, *p*=.024, d=0.4. The effect size of 0.4 indicates relatively a medium effect size (Cohen, 1988). Thus, the yielded results suggest that when faced with a failing condition, students generate quantitatively more strategies and learning approaches compared to students in non-failing condition.

Second, I carried out three more analyses to observe the mean difference between the experimental and control group conditions on the number of total cognitive strategies and deep and surface cognitive strategies separately. The results indicated significant mean difference on total number of cognitive strategies between the experimental (M=3.44, SD=1.88) and control group (M=2.65, SD=1.92), t(157)=2.60, *p*=0.01, d=0.4, which is a medium effect size (Cohen, 1988). The finding supports hypothesis 1 and concludes that students when faced with academic failing condition generate quantitatively more cognitive strategies compared to students in a neutral condition.

Thirdly, the mean difference on deep cognitive strategies between the two conditions were: experimental group (M=2.04, SD=1.39) and control group (M=1.71, SD=1.40), t(157)=1.48, *p*=.14, d=0.2. The results indicated no significant difference on the number of deep cognitive strategies between the experimental and control groups.

Fourthly, I carried out an independent sample t-test to compare the means on total number of surface strategies in the control and experimental conditions: experimental group (M=1.40, SD=1.19) and control group (M=1.00, SD=.98), t(164)=2.40, *p*=.017, d=.37, which is a weak to medium effect size. The yielded results indicated that students in the failing condition generate significantly more surface cognitive strategies compared to students in non-failing conditions.

In sum, the results supported hypothesis 1 and suggest that students in learning failing condition generate significantly more cognitive strategies compared to students in neutral condition. Also, students in failing condition elicit significantly more surface cognitive strategies but not quantitatively more deep cognitive strategies compared to students in the non-failing condition.

5.9.2 Moderation Analysis

Hypothesis 2: Academic hope will moderate the impact of the experimental condition on the utilization of deep cognitive strategies such that those who are higher in hope will utilise more deep strategies compared to those who are lower in hope.

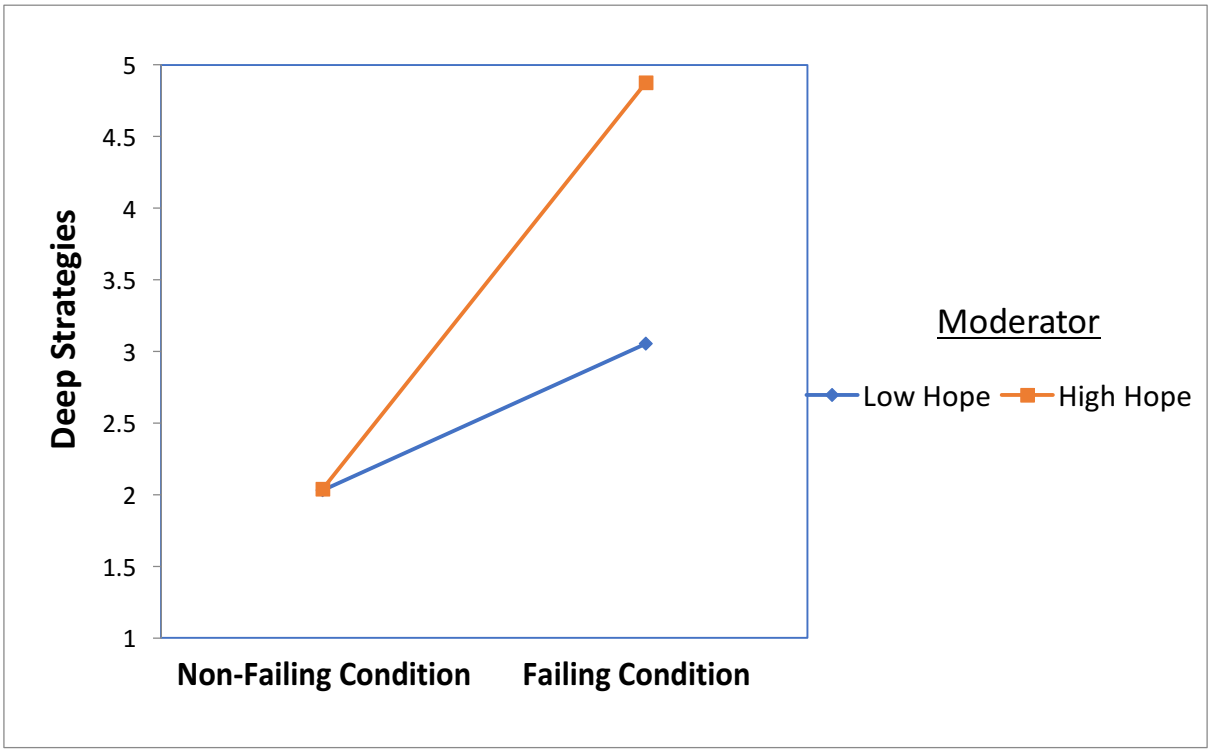
In order to test the second hypothesis and observe the moderating effect of academic hope in explaining the influence of the experimental condition as the independent variable on the likelihood of *utilising* the elicited deep strategies as dependent variable, I conducted a moderation analysis. First, the results indicated in the multiple regression analysis that was carried out to predict the likelihood of using deep cognitive strategies based on the participants' academic hope was b=.38, t(110)=4.03, p<.001. Thus, a significant regression equation was found (F(2, 108)=8.140, p<.005. Afterwards, I created the interaction effect between the moderating variable and the experimental conditions (with dummy coded variable) and added to the regression model as Model 2. This interaction accounted for a significant additional variance in students' utilization of deep cognitive strategies, $R^2 = .14$, $p < .05$.

Finally, in order to plot this interaction, I followed Aguinis (2004) method and chose a value of 1 standard deviation above and below the mean of the independent variable and plotted the variables accordingly[3]. The results of the significant interaction effect between the experimental failing versus non-failing condition on the utilization of deep cognitive strategies was moderated by academic hope and this is presented in Figure 5.1.

[3] The plotting of the interaction effect was carried out on Excel sheet for the independent variable (plotted on X-axis) whose relationship with the DV (utilisation of deep cognitive strategies) was being moderated by hope. Hope as the other IV was doing the moderating and the Interaction was the product variable.

Figure 5.1

Significant Interaction Effect on the Utilization of Deep Cognitive Strategies



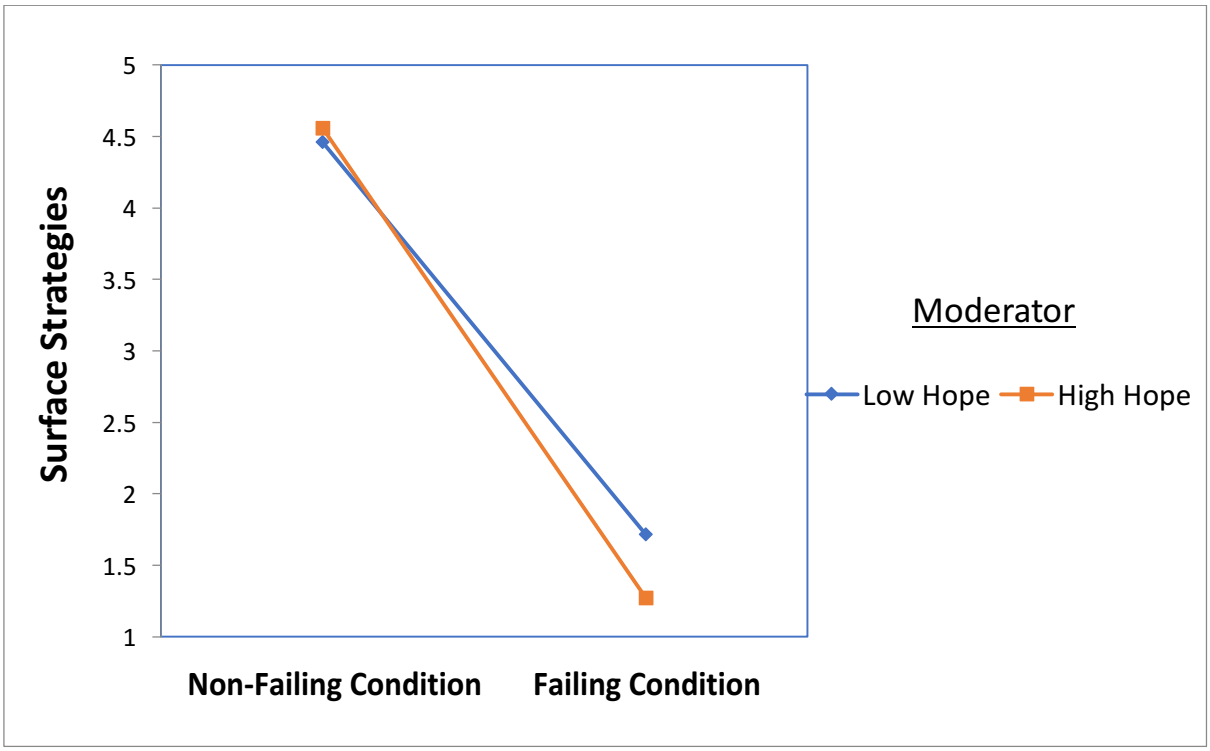
Therefore, the moderation analysis suggested that there is a significant main effect of the experimental condition on the likelihood of using deep cognitive strategies which in turn is moderated by academic hope. Specifically, students who are higher on hope generate more deep cognitive strategies compared to students who are lower on hope.
In sum, students differ in their production of deep cognitive strategies with respect to an experimental condition depending on the level of academic hope.

The same multiple regression analysis was carried out to predict the utilization of surface learning strategies based on the academic hope and the reported results were: b=.10, t(93)= -.930, p>.05. Thus, a non-significant regression equation was concluded, (F(2,91)=2.537, p>.05 with a non-significant R^2=.024, p>.05. In short, academic hope did not account for significant variance in the likelihood of using surface strategies and when the interaction effect between the experimental condition and hope was added, again no

significant effect was observed. Also, the interaction effect was plotted in Figure 5.2 for comparison purposes.

Figure 5.2

Non-Significant Interaction Effect on Utilization of Surface Strategies



The yielded results of hypothesis 2 indicated that there is no main effect of the experimental condition on the likelihood of generating surface strategies and no significant moderation effect by hope. This suggests that the main effect of experimental condition on surface strategies was not moderated by hope.

To summarise, the results of the experimental Study 2 observed that in the face of the experimental learning condition, high hope students elicit quantitatively more number of cognitive strategies but not necessarily not deep cognitive strategies. However, when it comes to the utilisation of the elicited strategies, the effect of the experimental conditions on the utilisation of deep cognitive strategies was moderated by the academic hope of the

high school students. In turn, the effect of the experimental conditions on the utilization of surface cognitive strategies was not moderated by the academic hope of the participants.

5.10 Discussion

In addition to its positive and significant association with academic achievement (results of Study 1), the results of Study 2 suggest that when faced with academic failing condition, students generate significantly more cognitive strategies compared to the students in a neutral condition. This finding supports hypothesis 1 of Study 2, which assumed that when faced with learning barriers or failure students generate more cognitive routes to achieve learning goals. Most likely, students turn these barriers and failures into opportunities and consequently find and utilise alternative routes for goal achievement. Moreover, due to the instrumental value of such exams for university admissions, students maintain progressive agency and conceive viable pathways to overcome impairments and yield anticipated results.

The results of Study 2 also indicated that academic hope moderated the effect of academic failure on the generation of students' deep cognitive strategies. However, the effects of academic failing condition (versus neutral condition) on the generation of surface cognitive strategies was not determined by the students' level of academic hope. In this direction, despite the failing condition, most likely participants with higher hope still continue to demonstrate hopeful thinking that is relevant to performance and goal attainment. In the face of the experimental conditions, students higher on hope develop emotional coping mechanisms that focus on goal attainment and most likely they become self-motivated to persevere against difficulties and challenges which results in the utilization of deep cognitive strategies that are adaptive to the learning context.

In sum, when students appraise the learning task as controllable and meanwhile judge the task as valuable for certain gains for future success and avoidance of failure, they are more likely to experience positive achievement emotions such as hope. In addition,

hopeful students develop an agentic thinking over the presented learning tasks and respond with the generation and utilization of adaptive and plausible learning strategies.

5.11 Conclusion

In the current chapter, after reviewing the major literature on hope and the deep versus surface cognitive strategies, the methodology of Study 2 was outlined. The rationale, procedure and the data analysis was presented. The chapter ended with the reporting of the yielded data and a short interpretation of the results. Chapter 6 of the thesis will look into the broader implications of the two research studies and discuss the theoretical and conceptual significance of the findings.

Chapter 6

General Discussion

6.1 Research Questions of Study 1 & 2

In Study 1 & 2, the role of PsyCap and academic hope in explaining students' motivational processes and utilization of deep cognitive strategies was explored with 304 and 152 high school student participants, respectively. Instead of reiterating the findings, the below responses will answer the postulated research questions and highlight the conceptual and empirical contributions of the findings to the field of motivational belief.

On empirical and conceptual levels, how does high school students' PsyCap as a second order construct exist through a specified model?

By carrying out Confirmatory Factor Analysis, it was concluded that PsyCap is a multi-dimensional and a higher-order construct that exists as an amalgamation of four first order constructs: self-efficacy, hope, optimism and resilience. PsyCap has a synergistic effect on academic achievement that is explained through its power in predicting performance above and beyond its subscales. Consequently, as a construct with robust factorial structure, PsyCap can be studied in a high school context to better understand high school students' motivational beliefs and achievement outcomes.

How is the PsyCap of high school students associated with their learning outcomes?

Results of Study 1 indicated that when investigated individually, each dimension of PsyCap explained certain variance on achievement outcome and synergistically PsyCap as a compound variable significantly influenced successful performance above and beyond its individual subscales. Learners who mobilize their psychological resources during learning behaviours are more likely to achieve higher in their learning goals compared to students who show qualitatively less reliance on these resources.

How do PsyCap and deep cognitive strategies correlate with each other?

Based on the yielded positive association between these two variables, it was concluded that learners with high PsyCap approach learning with unique strategies and methods to acquire knowledge and information. Students who adopt similar learning strategies will interpret this information in the light of positive outlook and optimism to attain valuable goals without being compromised by negative expectations. Previous lines of research also observed that self-efficacy in longitudinal studies explains additional variance on students' cognitive strategies (Linnenbrink & Pintrich, 2003). The correlation between PsyCap and cognitive strategies supports this line of argument by assuming that children internalise these strategies with positive resourcefulness to achieve higher. In sum, high PsyCap students focus on selecting, encoding and processing information that ensures the optimum outcome which in turn is associated with their positive motivational beliefs.

How is the level of perceived instrumentality of a learning task related to academic achievement of high school students and how is the relationship mediated by PsyCap?

As an independent variable, the way students find value in their learning activities has direct and positive effect on respective learning outcomes. PsyCap as a resourcefulness self-belief partially accounted for the relationship between perceiving schooling as useful for certain distant goals and performance level. In Expectancy-Value theory, task value is assumed to predict students' efforts, choice and persistence. In addition, the findings from Study 1 observed that perceived instrumentality has direct and indirect effect on achievement outcome via students' PsyCap. Conversely, students who value their learning as less important are more likely to be less engaged and diminish potential use of psychological resourcefulness to achieve or execute learning tasks; hence, the centrality of psychological resources in accounting for the relationship between instrumentality and outcome.

How does the whole hypothesised learning model predict high school students' learning outcomes?

The interpretation of the results of the tested learning model indicated that if students possess a set of cognitive, psychological and motivational resources without perceiving learning as valuable they are less likely to show efficaciousness and hopeful cognitions. Students must see learning as instrumental for specific future gains to increase their positive motivational beliefs and consequently aim for higher achievement.

In the face of learning adversities, do students generate more learning cognitive strategies compared to students in non-failing condition?

The results of the experiment indicated that in an academic failing condition, students generate more cognitive strategies compared to students in a non-failing learning condition. The observed outcome reported significant mean differences in the total number of surface strategies between experimental versus non-experimental conditions. Moreover, students who are faced with academic failure they are more likely to generate more surface cognitive strategies but not deep cognitive strategies comparted to students in non-failing condition.

Is there significant difference in the nature of the elicited cognitive strategies between deep and surface cognitive strategies?

Yes, the outcome of the moderation analysis indicated that the effect of the experimental learning conditions on the utilization of deep cognitive strategies was moderated by academic hope. However, the same effect on the utility of surface strategies was not moderated by academic hope. Hence, when students with higher hope face an experimental condition, they are more likely to utilise deep rather than surface strategies in order to achieve better in university admission exams.

6.2 Overview of the Conceptual Significance of PsyCap

Previous studies have reported successful learning outcomes associated with positive motivational beliefs of students. As a result of the conclusions from Study 1 that pertain to the factorial structure of PsyCap, it was observed that PsyCap emerged as a psychometrically robust higher order positive construct in a high school setup that directly predicted achievement. Second, as a positive motivational belief, PsyCap also indirectly explained high school students' future motivation on learning outcomes. Consequently, examining positive motivational beliefs that have the property of being malleable should receive more systematic theoretical, empirical and practical attention. Also, the influential role of hopeful cognitions in the utilization of deep cognitive strategies dictates further embedding of academic emotions specially during periods of academic failures. Thus, in order to better understand the predictors of successful learning, more holistic models should be adopted that underpin students' cognitive, emotional and motivational factors.

6.3 A Conceptual Discussion: Explaining Achievement Outcome via Motivational Beliefs

Students not only contribute to their learning outcomes through different mental and cognitive abilities, but they also actively contribute to their learning experiences through diverse set of motivational beliefs. Different students pursue different aims for learning behaviour. Mostly framed within a motivational framework, the instrumentality of learning explains the "Why am I doing this activity?" question since possessing a particular cognitive strategy does not ensure that students will necessarily execute and persist in a learning endeavour, especially if learning is not vertically linked to final achievement outcome, such as grade promotion, graduation and enrolment in higher education. In this regard, the results of Study 1 indicated that students who perceive learning as instrumental are more likely to achieve better via their psychological and motivational dispositions that are both present and future oriented. The significance of these relationships is conceptually interpreted in three ways:

First, the results suggest that students' perception of the learning value is emotionally bound and in order to influence the learning outcomes this perception of utility value acts together with PsyCap to contribute to performance outcome. Most probably, forethought learning actions that have instrumental value for future goals are believed to influence learning outcomes since the way the instrumental value of a learning task is embodied in students' learning thoughts and affection will most likely generate positive thought-affect actions and translate into the development of increased motivational beliefs and consequently into higher achievement.

Second, if students value their learning tasks and see instrumental value in achieving them, most likely this perception of instrumentality will help them to attribute positive emotions for their learning tasks. For example, when students perceive instrumental value in learning a second language for future employment opportunities, they are more likely to generate different hopeful pathways with the ultimate aim of accomplishment and achievement. Likewise, when students see fundamental value in learning and aim at achieving distant goals, they are more likely to bounce back from adverse learning circumstances and engage in more positive responding mechanisms for self-corrective behaviour. However, when students dismiss the future goals of their learning behaviours as personally and academically irrelevant, this might not lead to positive outcome and consequently diminished competency beliefs are likely to follow. The negative emotions that are instigated as a result of negative appraisal of current tasks for future achievement motivation will in turn lead to lower levels of academic achievement. In fact, the underpinning reasons for psychological bonding with future motivation may also vary depending on the pedagogical classroom practices of teachers and information conveyed by socio-cultural givens. In fact, until recently there is limited literature that empirically studies the antecedent factors that shape the way students perceive learning as instrumental for future goals including the possible roles of parenting and other socio-cultural variables that convey information and beliefs related to students' interests and aspirations for schooling. Also, perceived instrumentality may contribute to individual level of PsyCap in terms of optimistic attributions. For the same example, if a student values language learning as critical, he/she might link failure in the learning process to

external and temporary situational factors rather than to lack of motivation. As a result, the student will actively engage in learning activities and consequently attain desirable goals.

Third, the significant and positive association between instrumentality and PsyCap has practical underpinning interpretations. For example, when a student perceives executing mathematical tasks as critical to attain high grades that will in turn increase his/her chances to be accepted into an engineering major, most probably she/he will invest additional effort, become more intellectually and cognitively stimulated and conceive more pathways to achieve higher results. The distant goal of becoming an engineer will enrich the motivational dispositions of the student. Most probably, the importance of a distant goal especially if it is related to personal and academic achievements such as graduation or entering the job market will have more positive influence on motivation and persistence compared to goals that are short-lived.

Fourth, the results indicated that PsyCap as a second order construct influences students' achievement level above and beyond individual influences of self-efficacy, hope, optimism and resilience independently. In cases, for example, where poor self-efficacy resulting from novel and challenging task execution might impair performance and leads to uncertainty and anxiety, the other variables might collectively *buffer* for positive attainment by rendering forethought control over the potential outcome of the learning activity. This line of argument is in concert with Conservation of Resource theory, which suggests that competency beliefs accumulate, and act as a caravan of resources (Hobfoll, 2002) to influence psychological wellbeing, productive functioning and motivation for achievement. When students encounter failing conditions and goal-attainment behaviour is at risk, various accumulated resources are mobilised to pursue learning goals. One essential reason for individuals to conserve and mobilise their resources is the critical value of these resources for learning and achievement. Similar to COR theory, Snyder (2002) suggests that positive hope and optimism are goal-based cognitive processes that become activated and operational when the outcome goals hold certain value. The results of Study 2 are in line with this conclusion which assume that in an academically difficult

condition, high hope students who perceive certain value for the task are more likely to utilize deep cognitive strategies.

Lastly, as the results of Study 1 indicate (Hypothesis 8), in addition to the direct significant effect of instrumentality on achievement, the independent variable has also indirect effect on the outcome variable via PsyCap, the mediating process. Previously, the mediating role of one of these four sub-facets, self-efficacy, has been strongly established. For example, a quarter century earlier, Pajares and Miller (1994) initiated a sequence of mediational studies on the mediating effect of self-efficacy in mathematical problem-solving situations. In this set of studies, it was concluded that self-efficacy mediates between prior experience and math problem solving strategies. Similarly, the results of the current study indicate that not only self-efficacy but also PsyCap as a second order construct partially mediates the relationship between the instrumental values that students' hold and their respective academic outcomes.

6.4 Association between Perceived Instrumentality and Deep Cognitive Strategies

In addition to observing a significant path from instrumentality to PsyCap in the tested learning model of Study 1, the yielded results also indicated a significant relationship from perceived instrumentality to cognitive strategies which suggests that high school students' enhanced instrumentality leads to the utilisation of deeper and more complex learning strategies. Most likely due to the fact that students attach to these goals significant personal value with the ultimate aim of avoiding failure, students utilise more efficient pathways and approaches. This line of argument is supported by previous empirical findings. For example, Horstmanshof & Zimitat (2007) reported that college students who maintained a future-time perspective were more likely to use adaptive learning approaches.

6.5 Interaction between Motivational Belief, deep cognitive strategies and achievement

The reported results in Study 1 observe that there is a positive and significant correlation between students' deep cognitive strategies and their psychological capital. By assuming that human behaviour is goal oriented and forethought (Deci & Ryan, 2000), it is contended that individuals who are confident, hopeful and optimistic about their personal resources are more likely to conceive deep cognitive strategies whereas students who are doubtful about their psychological toolkits will conceive less deep strategies. Results of Study 2 also support this conclusion and suggest that when faced with a failing condition students who are higher on hope will utilise more deep cognitive strategies by planning alternative routes compared to students who are lower on hope.

First, psychological resources facilitate the generation of deep strategies and reciprocally being enrolled in deep cognitive strategies can induce and foster positive motivational resources due to the mastery and controllability of these strategies for learning goal attainment. Students with a sense of control suggest positive expectancy for success through forethought actions (Marsh, 1990) and in turn by understanding the reasons behind successful learning, students enhance their sense of control and motivational tendencies. This conclusion is supported by the fact that unlike shallow cognitive processes, empirical evidence suggests that students who utilise deep cognitive strategies have a stronger locus of control (Gadzella, Ginther, Masten & Guthrie, 1997). As a result, in the face of academic setbacks, students who attribute their strategy to uncontrollable determinants will adopt less effective strategies while those who link effective strategies to controllable variables will approach setbacks with attentiveness for change and improvement. For example, when a student ascribes the reason for receiving high scores in end of year chemistry examinations to personal control of efficacious thoughts and hopeful cognitions rather than external reasons (sitting for a set of facile assessments), the conception that success is contingent on controlled motivational beliefs will reinforce the effectiveness of these beliefs for yielding positive outcomes in future examinations.

However, the results of Study 1 also concluded that there is no significant direct path from students' deep cognitive strategies to academic achievement. Consequently, if students possess the necessary psychological and motivational dispositions (self-efficacy, hope, optimism and resilience) and utilize deep cognitive strategy, the utilization of deep cognitive strategies might not necessarily yield a high level of academic success. For one reason, the relationship between cognitive strategies and outcome might be nonlinear due to internal and external influences, which implies that cognitive strategies for achievement performance do not operate independently. Learning and reasoning through cognitive methods and strategies interact with other factors that could have been not observed in this study.

Secondly, due to the fact that the achievement outcome in Study 1 reflected the cumulative or summative performance of the students at the end of the academic year, this outcome could have been influenced by other factors such as students' utilization of surface and other self-regulatory approaches. Consequently, neither the possession of deep cognitive strategies predicts achievement outcomes nor the mere knowledge of how to use these cognitive strategies ensures its consistent usage. For example, possessing the knowledge of the usefulness of planning, drafting and revising for essay writing might not ensure that the student will ultimately use these strategies for better performance; instead in order to determine the successful usage of this writing techniques student should forecast potential positive desirable outcomes. In fact, a similar observation is previously made by Dinsmore & Alexander (2012) in their review on the conceptual orientation in the way deep versus shallow learning processing and approaches is scientifically investigated. In their review, the authors argued that one of the underpinning reasons which has resulted in inconsistent results between deep and surface strategies on the students' learning outcome is the *contextual consideration* within which these two constructs are examined.

Finally, as suggested by Covington (2000), the evolving nature of learners' achievement motivation necessitates further theoretical and empirical investigations to observe potential interactions beyond the relationship between cognitive strategies and

achievement and include the motivational dimensions for a more robust *tripartite model* analysis of student learning achievement. Adopting a similar tripartite approach to explain learning and its outcomes was first pioneered by Paul Pintrich (1994a, b) when he proposed the development of theoretical models in the field of educational psychology that incorporate motivation/affective, behavioural and cognitive factors. Essentially, no model postulates a universally accepted framework for successful learning possibly not because of the conceptual deficiencies of such models but because of the complex, changing and contextual nature of successful learning that is often influenced by overlapping layers of personal and environmental factors and barriers that impair goal attainment processes. Nevertheless, positive motivational beliefs that were examined in the 2 studies explained successful learning outcomes and the utilization of deep cognitive strategies.

6.6 Academic Hope and Learning Strategies Under Failing Condition

The results of the experiment in Study 2 indicated that academic hope as a relatively newly emerging affective concept has a potential role in explaining the quantity, quality and utility of students' cognitive strategies. Unlike students' retrospective feelings, such as pride and joy in success and achievement, hope is a prospective feeling. In this context, it is important to distinguish between outcome related emotions versus activity related emotions (Pekrun & Stephens, 2010). For example, outcome-related affection related to performance of activity or tasks that students conduct might lead to enjoyment or conversely anger whereas students might also experience anticipatory emotions such as hope. Therefore, students who think prospectively about a failing condition are more likely to elicit more cognitive learning strategies and utilize only deep cognitive strategies that can be relevant to the task at hand. Most likely, during periods of failure students with these prospective motivational beliefs such as hope make positive appraisal and consequently generate and utilize learning pathways. Accordingly, it is contended that high hope students who envisage and utilise various cognitive strategies have the potential to adjust their strategies according to the specificity of the hypothesised outcome.

Furthermore, previously, emotions were studied separately and were mostly untangled from the cognitive processes involved in shaping learning outcomes. Instead, as the results of this experiment observed, emotions and affect should rather be explored synergistically with other cognitive and motivational factors since there is continuous interaction and reciprocal linkages between cognitive, motivational and emotional determinants of learning outcomes.

In this regard, hope is conceptualised as a "positive motivational state that is based on an interactively derived sense of successful agency [goal directed behaviour] and pathways [plans to meet set goals]" (Snyder, Irving & Anderson, 1991, p.287). Hopeful students who have the determination for goal achievement will generate and maintain different cognitive routes for learning task performance and achievement. As a result, they are more likely to bounce back from failure and purposefully design learning strategies that have a previously proven record of successful results and similarly disregard the less productive ones. Thus, the more successful and productive a pathway demonstrates desirable outcomes, the more confident they become in developing positive and hopeful self-beliefs.

Meanwhile, as the results indicated, it is critical to mention that the moderating effect of academic hope was only observed in the utilisation of deep cognitive strategies rather than surface strategies. In times of academic barriers for success, students higher on hope were more likely to utilize only deep cognitive strategies. Most probably students higher on hope appraised the experimental conditions with positive attitude and conceived their cognitive strategies in a method that ensures future academic success. Similarly, Pekrun et. al (2000, 2006) *Control-Value theory* posits that achievement emotions are proximally determined by an individual's cognitive appraisal of value and control. I assume that instead of avoiding an unwanted outcome, academic hopefulness as a prospective motivational resource helps students to approach a learning goal due to its controllability and value for future gains (university admission).

6.7 Positive Motivational Beliefs in Conservation of Resources Theory

According to Hobfoll's Conservation of Resources theory, COR, (1989, 2011), individuals with initial personal resources invest in the attainment of future resources. Probably individuals with high PsyCap will analyse and appraise their learning circumstances and expected learning outcomes and consequently positive outcome expectations will help them to envisage different strategies for goal fulfilment. More specifically, when goal attainment impediments might flatten the agentic thinking and pathways of low PsyCap individuals, high PsyCap students will approach such barriers with greater optimism to overcome and achieve. Also, this psychological resourcefulness will drive students to investigate potential alternative pathways and strategies by relying on outside resources such as parents, teachers and friends. In this regard, it has been previously observed that students with high self-efficacy are more likely to develop *prosocial skills* and consequently achieve better than low self-efficacy students (Bandura, Barbaranelli, Caprara & Pastorelli, 1996). Similarly, students with high PsyCap will purposefully expand their social linkages with the aim of achieving higher performance. This conclusion was partially supported by the reported results in Study 2 which observed some strategies that did not pertain to the students' cognitive strategies which were linked to the way students communicated with others such as siblings, parents and teachers in order to be prepared for their examinations. For example, some of the provided answers indicated that high school students utilise other external resources such as conferring with teachers, tutors, siblings and parents. These approaches were not thematically categorised under surface versus deep strategies and consequently excluded from the final analysis. Yet, similar elicited approaches indicate that depending on situational cues, students sometimes manage external resources to achieve learning goals and outcomes.

6.8 Teaching and Learning Implications of the 2 Studies

In addition to contributing to the theoretical and empirical literature of achievement motivational beliefs, the interpretation of the present results has also practical and application usefulness. Initially, by having in mind the positive consequences of PsyCap

and its four-facets, it is important for policy makers and high school educators to focus and embed the concept of PsyCap into their daily classroom instructions, educational policies, practices and interactions with students.

6.8.1 Positive Motivational Belief and Teaching

The malleable property of PsyCap and its four sub-facets has promising implications not only for underachieving students or students in academically failing conditions who have developed a belief of incompetence but also for high achieving students to fully realise their academic potential. PsyCap by being characterised as malleable propagates into students' motivation for achievement and learning and facilitates better achievement. This malleability might have observed consequences not only with general high school population but also with students with special learning difficulties. For example, in one study, the level of academic hope of students with learning difficulty was enhanced with specific training and interventions which concluded that with proper training similar motivational beliefs can be taught in forward-thinking and positively oriented learning classrooms (Rosenstreich, Feldman, Davidson, Maza, & Margalit, 2015). Therefore, embedding and fostering students' PsyCap, as a psychometrically robust developable construct within the instructional and learning practices has to occupy an integral place in educational psychology and teaching/learning practices. Consequently, whenever students learn, perform and achieve in positively future-oriented classrooms, and this positively oriented learning is established as the *norm,* teachers can provide a positive environment for children to learn and grow with efficacious and hopeful thoughts and beliefs. In turn, teachers' conceptualisation of different sets of predictors for students' motivational processes including hopeful and optimistic learning strategies can enhance the daily instructional and pedagogical strategies in a way that makes students' learning more meaningful.

6.8.2 Instrumentality and Teaching

A second indicative practical conclusion from the current thesis suggests that besides delivering quality instruction, teachers can equally attend and highlight the importance of establishing a linkage between *utility value of learning* and students' PsyCap as a resourcefulness propensity for better performance. Teachers can convey the message that for optimum performance, student's approach to learning should envisage these three influential determinants: *Value of learning, relevant strategy and positive belief.* In terms of relating instructional content to distant valued goals, endorsing a school wide curriculum that is wide in scope to meet the potential future learning plans of its students might further act as a motivator for further achievement by making content accessible and meaningful to students to specialise in various disciplines. However, I do also understand that schools and teachers might not be able tailor or provide valued and relevant learning tasks, curriculum and textbooks to meet the future interests of individual students. Yet, my argument rests on the notion that by indicating the instrumental value of "present" learning experiences and by focusing on psychological resourcefulness, teachers can establish and grow resourceful, efficacious and resilient learning classrooms where students regulate and direct their learning behaviour in such a way that this learning behaviour meets their long-term goals.

6.9 Significance of the 2 Studies

Expectancy Value theory poses the question: "Can I do the task at hand?" by relating the outcome expectation to student motivation in task engagement and the student's ability belief to determine academic outcome; however, it does not enquire about "How can I do the task at hand?" or "What are the motivational resources that are required to perform a task for future gains?" Negative experiences often *flatten* students' learning motivation including frequent failures and ambiguity of future educational plans. According to Elliot and Church (2003) in the face of similar negative experiences students usually envision strategies to avoid failures such as self-handicapping strategies and defensive-pessimism, which in turn is shown to undermine achievement. PsyCap and its sub-facets as a

positive motivational construct is believed to have an influential role in motivating students and performance outcome.

Secondly, there is a noticeable lack of empirical and conceptual investigations that examine holistic models, such as cognitive and motivational factors, to explain learning processes and outcomes. In this regard, the problem with relying solely on self-efficacy beliefs to explain students' future motivational goals is problematic in two different ways: first, researchers and educators often ignore the drawbacks of overconfidence and its adverse effects on performance and motivation (Vancouver, Thompson & Williams, 2001). Second, the fragility of efficacy as a cognitive self-belief, particularly in young children who have not fully developed a realistic self-appraisal system, limits our full understanding of its influence on motivation. For example, according to Wigfield and Eccles (1992) individuals' self-belief in mathematics deteriorates during early adolescent years following transition to middle school and this decline continues across high school years (Jacobs, Hyatt, Eccles, Osgood & Wigfield, 1999 as cited in Wigfield & Eccles, 2000). This change in self-efficacy is explained by the fact that social comparison among students results in the lowering of ability beliefs. Consequently, as children become older they start to develop different cognitive routes in order to draw more realistic images of themselves. Hence, there is a conceptual and empirical gap in the literature of motivation beliefs that dictates an investigation into the potential role of a *multifaceted psychological constructs,* such as PsyCap, in explaining learning behaviour.

Meanwhile it is important to remember that the current research was aimed to examine the role of PsyCap synergistically without downplaying the role of any of its subscales. In accord with many findings, self-efficacy has often been observed as one of the most important self-beliefs that motivate students to achieve. If self-efficacy motivates students and directly influences academic achievement, I argue that PsyCap can sustain its progress. For example, due to the complex nature of learning and knowledge acquisition, students might face academic failures and barriers. However, when equipped with additional hope, optimism and resilient traits students will likely envision diverse pathways to attain potential positive outcomes (findings of Study 2). By relying on the

strengths of a broad and comprehensive set of positive self-referent thoughts, students can further enhance their inner control against possible independent environmental factors that might negatively alter an expected learning outcome. In fact, the role of feeling and affective regulation was mentioned by Bandura (1986) where he concluded that for individuals to have a sense of control, they develop a system of self-beliefs and in turn "what people think, believe, and feel affects how they behave (p.25).

In summary, suggesting robust learning models for achievement that underpins a dynamic interaction between cognitive, motivational and affective patterns might still remain theoretically and empirically incomplete and inconclusive. The significance of this study lies in its further integration of additional factors such as PsyCap to better understand students' learning processes. The study followed the recommendations of late Paul Pintrich (1994) who concluded that in addition to cognition and self-regulation, affective and motivational components of students' conceptualisation of learning is equally significant in predicting successful outcome.

6.10 Limitations of the 2 studies

Similar to other studies, the current thesis had certain limitations. First, as mentioned previously, the correlational path in the model in Study 1 between PsyCap and deep cognitive strategies was a procedural and statistical limitation that I faced while drawing and analysing the learning model in Structural Equation Modeling by using AMOS statistical program. Instead, the correlational relationship between the 2 variables was analysed independently (bi-varietly) and it was excluded from the final analysis of the stipulated learning model.

Secondly, the main focus of the 2 Studies was on the general learning strategies and approaches that are applicable across subject areas and disciplines. Areas that require domain specific strategies were not included in this study. For example, the approaches required to master reading and writing skills might significantly vary from the cognitive strategies needed to solve an unfamiliar situation in a mathematical task. Most likely, this

can be one of the underpinning reasons of not observing a significant association between deep cognitive strategies and achievement outcomes in Study 1.

Thirdly, the failing condition in Study 2 was a specific scenario that was related to students' higher education rather than a failing experience that occurs on a day-to-day basis such as receiving a failing grade or repeating a course. For this reason, some students might not concretise college education as a long-term goal and in return in real learning situations they might activate other cognitive and meta-cognitive strategies since the complexity of learning transcends into the utilisation of more generalised multiple strategies. Hence, students may generate deep and surface cognitive strategies yet when faced with real failing situations they might reroute their strategies.

Fourthly, it is also possible that some students refer to other resources in order to generate plans, strategies and approaches that might contribute to personal goal achievement. For example, variations in the classroom setups and teaching styles might also explain differences in the way students adopt cognitive strategies and strive towards their learning goals and performance. If teaching style and methodology encourages a positive and independent learning approach that is based on supporting students to develop pathways, techniques and strategies students might experience higher levels of hope and PsyCap. For example, in a recent empirical study, Richardson (2005) has observed that the way students perceive the quality of the courses that they are enrolled in directly influences the approaches they adopt to learn on similar courses. Similarly, various learning strategies and approaches can be adopted across different learning tasks such as during problem solving activities (Laurillard, 1997).

Fifth, the mere idea of using self-reporting methods to measure the positive psychological functioning of individuals is often criticised on theoretical and methodological grounds. For example, Eunkook Suh (2000) observes that in some cultures, for example North American, individuals report high levels of subjective wellbeing as a result of psychological 'pressure' to appear happy and confident and consequently create a self-perceived image to fulfil psychological and social self-claimed

expectations. In order to realise the conceptual orientation of PsyCap and methods of capturing its exhibition, further research is needed in this direction.

6.11 Future Studies

With regards to future research, first, the establishment of the direction of the flow of PsyCap and the way it progresses is critical in order to successfully develop individual or group plans to nurture PsyCap in students' mind-sets and learning attitudes (Luthans, Youssef, et al., 2007). By having in mind the fact that PsyCap is a developmental disposition, then in order to intervene for its growth and nurturing, one has to uncover its roots and contextual antecedents with the aim of building on these antecedents.

Second, a future research agenda should aim at investigating the interrelationships and variability among the four facets of psychological capital since the variance of its facets might be bound to certain learning circumstances and situational cues. For example, a student's self-efficacy might be inversely affected by a challenging learning activity whereas meanwhile she/he might become more hopeful and optimistic in terms of finding different cognitive strategies and pathways to overcome the given challenge. Thus, students maintaining higher scores in one of the facets of PsyCap might exhibit lower scores on another. And since, PsyCap is a malleable construct, one can anticipate similar variability in respect to the learning context, challenges and experiences. In the opposite direction, future research might also consider investigating the relationship between within-person and between-person variability of PsyCap and determine the flow of this relationship. If PsyCap can potentially grow, similarly it can attenuate as a response to situational cues and especially in the face of learning, personal and interpersonal adversities that might significantly inhibit their growth. This line of argument should not be limited to explore the predictability of PsyCap's subscales (as was done in Study 1); instead, it should examine other outcome variables such as problem solving, for example.

Third, future research should also observe the role of PsyCap as a positive attitude and motivational belief not only in future-oriented motivation, cognitive learning strategy and academic performance but also on additional learning and developmental areas including communication and leadership skills, critical thinking, verbal persuasion and learning styles. The raised questions imply that further streams of theoretical and empirical investigations are needed to understand the influence of PsyCap on students' different learning experiences. Thus, expanding the nomological network should be considered after a rigorous assessment of the psychometric properties of the construct which was established in Study 1. This aims to avoid conceptual over-inclusion of similar positive motivational beliefs under unsound theoretical frameworks.

Fourth, exploring group-level processes and dynamics that might ameliorate or inhibit the development of PsyCap is yet another field that deserves empirical investigation. For example, it is possible that the classroom's PsyCap might have differentiated predictive power on the individual level PsyCap and the competitiveness versus collaboration ethos of a school (classroom) might moderate the relationship between PsyCap and academic achievement outcomes.

6.12 Closing Remark

> The best thing for being sad is to learn something. That's the only thing that never fails...that is the only thing which the mind can never exhaust, never alienate, never be tortured by, never fear or distrust, and never dream of regretting…look what a lot of things there are to learn (T.H. White, *The Once and Future King,* p.183).

This project commenced with the above statement and it was predicated on previous observations on the way some students' approach learning with specific psychological toolkits and perceive learning as part of a journey towards a larger project. The primary aim of this research was to explore whether and how psychological capital as a potential alternative to other traditional capitals can ameliorate learning outcomes.

The interpretations of the findings of the 2 Studies indicated that positive constructs in educational psychology play a significant role in explaining academic motivation and achievement. By adopting Pintrich's (1994) conclusion, I believe that many *"fuzzy but powerful constructs"* (p.232) can have profound explanation on the way individuals' motivational orientation and inclinations in goal attainment processes are directed. PsyCap as a fuzzy yet influential phenomenon provides significant insights in terms of implications on theory and practice. Efficacy, hope, optimism and resilience as motivational beliefs enhance high school students' motivation and performance at a crucial developmental stage where during these adolescent years schools overwhelmingly emphasise social comparison based on aptitudes and delineate success and failure based solely on performance. As a response, cultivating malleable PsyCap becomes important. Unlike stable, unchangeable and uncontrollable traits, PsyCap can be enhanced. Consequently, students can develop a motivational belief system that assumes that competence is earnable and can advanced with training and coaching. This assumption that PsyCap is modifiable grants them control over their learning outcome. While high school students also start envisioning future goals and act in light of these representations, their psychological beliefs support their goal-action behaviours anticipatorily by positively interweaving with their cognitive strategies.

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Appendices

Appendix A: Letter of Consent to the Directors/Principals of the Schools

Dear Director

With this letter, we are approaching your school and invite the students in grades 10, 11 & 12 to take part in a research study "Psychological Capital Profiling: The influence of Academic Hope on Learning Behaviour". The study is conducted by Hovig Demirjian as part Doctorate of Education Program at Durham University.

This research project is supervised by Dr. Julie Rattray and Dr. Nadin Beckmann from the School of Education at Durham University. For any question, they can be reached at the following emails:

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nadin.beckmann@durham.ac.uk

The purpose of this study is to examine the impact of students' academic hope and the way it influences their learning behavior.

The students who will agree to participate in the study will be asked to answer questions related to the way they self-evaluate their academic hope in addition to discussing potential learning pathways that they use in time of exams.

The participation in this study will take approximately 30 minutes and will be carried out during the school time.

All responses given or other data collected will be kept confidential. The records of this study will be kept secure and private. In any research report that may be published, no information will be included that will make it possible to identify the students individually.

If you decide to agree on giving consent for your students to take part in this study, kindly sign this paper.

If you have any questions, requests or concerns regarding this research, please contact me via email at h.s.demirjian@dur.ac.uk

Director's Name and Signature: _____

Hovig Demirjian
Leazes Road
Durham City, DH1 1TA
www.durham.ac.uk
Durham University is the trading name of the University of Durham

Appendix B: Letter of Consent to the Parents of the Students

Dear Parents of Grades 10, 11 & 12

This is to inform you that your son/daughter has been invited to take part in a research study "Psychological Capital Profiling: The influence of Academic Hope on Learning Behaviour". The study is conducted by Hovig Demirjian as part Doctorate of Education Program at Durham University.

This research project is supervised by Dr. Julie Rattray and Dr. Nadine Beckmann from the School of Education at Durham University. For any question, they can be reached at the following emails:

julie.rattray@durham.ac.uk

nadin.beckmann@durham.ac.uk

The purpose of this study is to examine the impact of students' academic hope and the way it influences their learning behavior.

Your son/daughter will be asked to answer questions related to the way they self-evaluate their academic hope in addition to discussing potential learning pathways that they use in time of exams.

The participation in this study will take approximately 30 minutes and will be carried out during the school time.

All responses given or other data collected will be kept confidential. The records of this study will be kept secure and private. In any research report that may be published, no information will be included that will make it possible to identify the students individually.

If you decide to disagree on giving consent for your son/daughter and choose to opt out of this study, kindly sign this paper and return it to the researcher.

If you have any questions, requests or concerns regarding this research, please contact me via email at h.s.demirjian@dur.ac.uk

Parent's Name and Signature: _____

Hovig Demirjian
Leazes Road
Durham City, DH1 1TA
www.durham.ac.uk
Durham University is the trading name of the University of Durham

Appendix C: Letter of Consent to the Students

Dear Student of Grades 10, 11 & 12

You are invited to take part in a research study "Psychological Capital Profiling: The influence of Academic Hope on Learning Behaviour". Please read this form carefully and ask any questions you may have before agreeing to be in the study.

The study is conducted by Hovig Demirjian as part Doctorate of Education Program at Durham University. This research project is supervised by Dr. Julie Rattray and Dr. Nadine Beckmann from the School of Education at Durham University. For any question, they can be reached at the following emails:

julie.rattray@durham.ac.uk

nadin.beckmann@durham.ac.uk

The purpose of this study is to examine the impact of students' academic hope and the way it influences their learning behavior.

If you agree to be in this study, you will be asked to answer questions related to the way you self-evaluate your academic hope in addition to discussing potential learning pathways that you use in your exams.

Your participation in this study will take approximately 30 minutes.

You are free to decide whether or not to participate. If you decide to participate, you are free to withdraw at any time without any negative consequences for you.

All responses you give or other data collected will be kept confidential. The records of this study will be kept secure and private. In any research report that may be published, no information will be included that will make it possible to identify you individually. There will be no way to connect your name to your responses at any time during or after the study.

If you have any questions, requests or concerns regarding this research, please contact me via email at h.s.demirjian@dur.ac.uk

Hovig Demirjian
Leazes Road
Durham City, DH1 1TA
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Durham University is the trading name of the University of Durham

Appendix D: Declaration of Consent

Declaration of Informed Consent

I agree to participate in this study and the purpose of which is to examine the impact of students' academic hope and the way it influences their learning behavior.

- I have read the participant information sheet and understand the information provided.
- I have been informed that I may decline to answer any questions or withdraw from the study without penalty of any kind.
- I have been informed that all of my responses will be kept confidential and secure, and that I will not be identified in any report or other publication resulting from this research.
- I have been informed that the investigator will answer any questions regarding the study and its procedures. The research is Hovig Demirjian School of Education, Durham University who can be contacted via email: h.s.demirjian@dur.ac.uk
- I will be provided with a copy of this form for my records.

Any concerns about this study should be addressed to the School of Education Ethics Sub-Committee, Durham University via email to ed.ethics@durham.ac.uk

_____

Date Participant Name (please print) Participant Signature

I certify that I have presented the above information to the participant and secured his or her consent.

_____

Date Signature of Investigator

Hovig Demirjian
Leazes Road
Durham City, DH1 1TA
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Durham University is the trading name of the University of Durham

Appendix E: Scales Used in Study 1: Psychological Capital

Instructions: Kindly read the below questions carefully and then circle the appropriate answer on a 1-5 Likert Scale that you think is true. Please be open and honest with your answers.
The number from 1-5 present the following statements:

1 = not at all,	1 = mostly no	3 = sometimes	4 = mostly yes	5 = surely yes

Age: _____

Gender: _____

Grade level: _____

1. I feel confident analysing a long-term problem to find a solution.

1	2	3	4	5

2. I feel confident in representing my work in front of the classroom.

1	2	3	4	5

3. I feel confident contributing to discussions in the class.

1	2	3	4	5

4. I feel confident to set goals in my learning.

1	2	3	4	5

5. I feel confident contacting people to discuss difficulties

1	2	3	4	5

6. I feel confident presenting information to a group of peers.

1	2	3	4	5

7. If I should find myself in a jam at studying, I could think of many ways to get out of it.

1	2	3	4	5

8. At the present time, I am energetically pursuing my learning goals.

1	2	3	4	5

9. There are lots of ways around any problem.

1	2	3	4	5

10. Right now I see myself as being pretty successful at school.

1	2	3	4	5

11. I can think of many ways to reach my current learning goals.

1	2	3	4	5

12. At this time, I am meeting the learning goals that I have set for myself.

1	2	3	4	5

13. When I have a setback at school, I have trouble recovering from it, moving on.

1	2	3	4	5

14. I usually manage difficulties one way or another.

1	2	3	4	5

15. I can be "on my own," so to speak, in my studies if I have to.

1	2	3	4	5

16. I usually take stressful things at school in stride (with ease).

1	2	3	4	5

17. I can get through difficult times at school because I've experienced difficulty before

1	2	3	4	5

18. I feel I can handle many things at a time in my studies.

1	2	3	4	5

19. When things are uncertain for me at school, I usually expect the best.

1	2	3	4	5

20. If something can go wrong for me school-wise, it will.

1	2	3	4	5

21. I always look on the bright side of things with regards to my studies.

1	2	3	4	5

22. I'm optimistic about what will happen to me in the future as it relates to my education.

1	2	3	4	5

23. In school, things never work out the way I want them to.

1	2	3	4	5

24. With regards to my studies, I know “there is a light at the end of the tunnel”.

1	2	3	4	5

Appendix F: Scales Used in Study 1: Perceived Instrumentality

Instructions: Kindly read the below questions carefully and then circle the appropriate answer on a 1-5 Likert Scale that you think is true. Please be open and honest with your answers.
The number from 1-5 present the following statements:

1 = not at all,	1 = mostly no	3 = sometimes	4 = mostly yes	5 = surely yes

I learn and study in the school because…

1. My performance in the school is important for becoming the person I want to be.

1	2	3	4	5

2. My achievement plays a role in reaching my future goals.

1	2	3	4	5

3. Mastering the ideas and skills taught in the class will help me in the future.

1	2	3	4	5

4. Understanding the ideas and skills is important for becoming the person I want to be.

1	2	3	4	5

5. Learning these ideas and skills is important for achieving my dreams in the future

1	2	3	4	5

Appendix G: Scales Used in Study 1: Cognitive Strategies

Instructions: Kindly read the below questions carefully and then circle the appropriate answer on a 1-5 Likert Scale that you think is true. Please be open and honest with your answers.
The number from 1-5 present the following statements:

1 = not at all,	1 = mostly no	3 = sometimes	4 = mostly yes	5 = surely yes

1. Before a quiz or exam, I plan out how I will study.

1	2	3	4	5

2. When I finish working practice problems or homework, I check my work for errors.

1	2	3	4	5

3. I plan my study time.

1	2	3	4	5

4. I have a clear idea of what I am trying to accomplish in my studies.

1	2	3	4	5

5. If I have trouble understanding something I go over it again until I understand it.

1	2	3	4	5

6. I try to plan an approach in my mind before I actually start homework or studying.

1	2	3	4	5

7. When learning new information, I try to put the ideas in my own words.

1	2	3	4	5

8. When doing an assignment, I make sure I know what I am asked to do before I begin.

1	2	3	4	5

9. When I study I am aware of the ideas I have or have not understood.

1	2	3	4	5

10. It is easy for me to establish goals for learning.

1	2	3	4	5

11. I answer practice problems to check my understanding.

1	2	3	4	5

12. I make sure I understand the ideas that I study.

1	2	3	4	5

Appendix H: Scales Used in Study 1: Grades for the End of Year

For purposes related to the following study, kindly provide the grade average or percentage of the total subjects/courses.

Student 1_____

Student 2_____

Student 3_____

Student 4_____

Student 5_____

Student 6_____

Student 7_____

Student 8_____

Student 9_____

Student 10_____

Student 11_____

Student 12_____

Student 13_____

Student 14_____

Student 15_____

Student 16_____

Student 17_____

Student 18_____

Student 19_____

Student 20_____

Student 21_____

Student 22_____

Student 23_____

Student 24_____

Student 25_____

Appendix I: Study 2, Experimental Condition

Dear Student

By considering your preparation for university admission, please take some time to reflect on the learning strategies that you use for sitting for admission exams such as SAT, ACT, TOEFL or IELTS.

Now, as part of the university preparation process, imagine that you have received a teacher's concern stating that you might not meet the minimum exam scores requirement to be enrolled in your preferred university major.

After being put in that hypothetical situation, think about how efficiently and effectively were you studying? What approaches you used to manage your time and organize different resources? Did you read critically or write for different purposes? How often you took notes? Did you estimate your answers when you were unsure of them?

Please enlist the strategy that you used and rate them accordingly:

1. Name of Strategy:

_____

I use this strategy: 1. Very Rarely 2. Rarely 3. Sometimes 4. Frequently 5. Always

2. Name of Strategy:

_____

I use this strategy: 1. Very Rarely 2. Rarely 3. Sometimes 4. Frequently 5. Always

3. Name of Strategy:

_____

I use this strategy: 1. Very Rarely 2. Rarely 3. Sometimes 4. Frequently 5. Always

4. Name of Strategy:

_____

I use this strategy: 1. Very Rarely 2. Rarely 3. Sometimes 4. Frequently 5. Always

5. Name of Strategy:

_____

I use this strategy: 1. Very Rarely 2. Rarely 3. Sometimes 4. Frequently 5. Always

6. Name of Strategy:

_____

I use this strategy: 1. Very Rarely 2. Rarely 3. Sometimes 4. Frequently 5. Always

7. Name of Strategy:

_____

I use this strategy: 1. Very Rarely 2. Rarely 3. Sometimes 4. Frequently 5. Always

Appendix J

GOALS-S scale: Categorization of Surface versus Deep Cognitive strategies (Dowson & McInerney's (2004) GOALS-S

Elaboration: Making connections between present and previously learned information- this may involve paraphrasing, generating analogies, and reviewing previous work.

1. When learning things for school, I try to see how they fit together with other things I already know.
2. When learning things for school, I often try to remember what I learnt in other classes about the same or similar things.
3. I try to understand how the things I learn in school fit together with each other.
4. I try to understand how what I learn in school is related to other things I know.
5. I try to see the similarities and differences between things I am learning for school and things I know already.
6. I try to match what I already know with things I am trying to learn for school.

Organization: Selecting, sequencing, outlining, reordering or summarizing important information.

1. I try to organize my school notes when I want to learn things for school.
2. I reorganize my schoolwork so that I can understand it better.
3. I organize what I have to do for school so that I can understand it better.
4. I use summaries to help me organize and learn my schoolwork.
5. When I want to learn things for school, I try to arrange them so that I can understand them better.
6. When I want to learn something for school, I make sure that I am organized

Rehearsal: Listing, memorizing, reciting, and/or naming facts/items to be learned.

1. When I want to learn things for school, I practice repeating them to myself
2. When I want to learn things for school, I reread my notes.
3. I try to memorize things I want to learn for school.
4. I memorize the things I want to learn for school.
5. I repeat things to myself when learning things for school.
6. I reread my books when I want to learn things for school.